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U.S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management

Final

Oregon State Office

May 1983

Roseburg Timber Management Environmental Impact Statement



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IN REPLY
REFER TO:

United States Department of the Interior

BUREAU OF LAND MANAGEMENT

Roseburg District Office
777 N.W. Garden Valley Blvd.
Roseburg, Oregon 97470

May 27, 1983

1792

This is the final environmental impact statement (FEIS) on the 10-year timber management plan for the Douglas and South Umpqua Sustained Yield Units in the Roseburg District. The purpose of the statement is to disclose the probable environmental impacts and to assure that these impacts are considered along with economic, technical and other factors in the decisionmaking process. In using this analysis, readers should keep in mind that a FEIS is not the decision document. A final decision will come later and will be announced in a Record of Decision.

A major issue of BLM's timber management throughout western Oregon has been concern regarding which uses of the forest land base were authorized under the terms of the O&C Act and subsequent legislation. In March 1983, following a major legal review and analysis of these authorities, BLM Director Robert Burford issued a new O&C Forest Resources Policy defining the agency position for the management of forest lands in western Oregon. The proposal developed from application of the policy (see Appendix A) is identified in the statement as the New Preferred Alternative (Alternative 9).

This EIS is being released in accordance with a schedule contained in the agreement of February 19, 1976, relative to the litigation in the U.S. District Court for the District of Columbia, entitled Natural Resource Defense Council, Inc., et al. v. Thomas S. Kleppe, et al., Civil No. 75-1861. Due to the addition of a New Preferred Alternative (Alternative 9), a 60-day comment period on the FEIS is established. Comments received by the Roseburg District before August 1, 1983 will be considered prior to the release of a Roseburg Record of Decision.

Sincerely yours,

James E. Hart
District Manager

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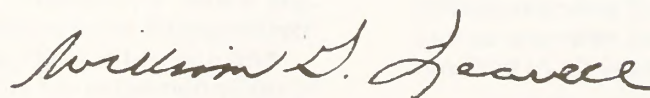
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Roseburg Sustained Yield Units

Ten-Year Timber Management Plan

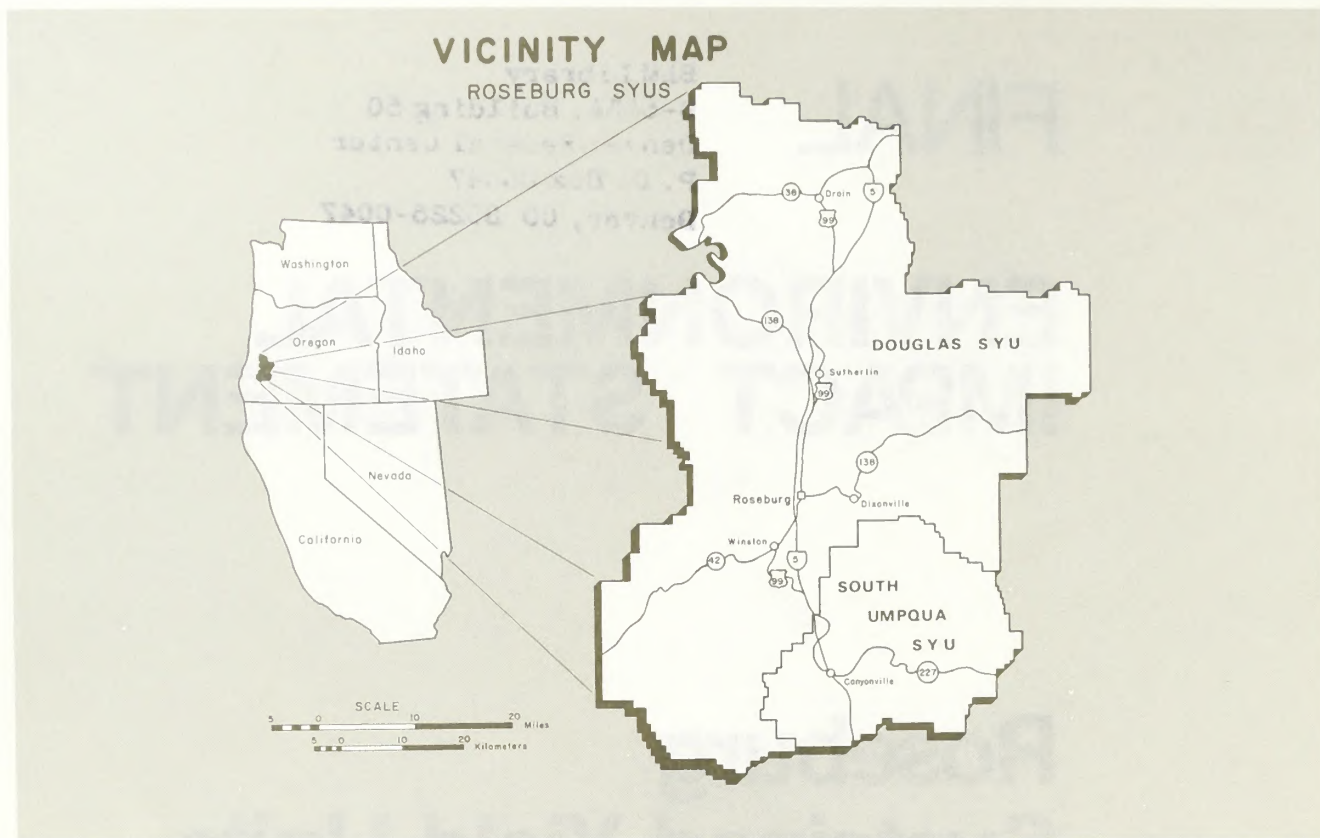
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U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
1983



State Director, Oregon State Office

Roseburg Proposed Timber Management



Draft () Final (x) Environmental Impact Statement Department of the Interior, Bureau of Land Management

1. **Type of Action:** Administrative (x) Legislative ()

2. **Abstract:** This EIS describes and analyzes the environmental impacts of implementing an updated 10-year (1984-1993) timber management plan for the 423,896 acres of public land in the Douglas and South Umpqua Sustained Yield Units in the Roseburg District, Oregon. The Bureau of Land Management is responsible for managing timber on public lands under the principle of sustained yield. Nine alternatives are described and analyzed for environmental impacts. The alternatives analyzed include: 1) Maximum Timber Production, 2) Strong Emphasis on Timber Production, 3) Lower Average Minimum Harvest Size, 4) the Original Proposed Action, 5) No Action, 6) Habitat Diversity, 7) No Herbicides, Fertilizer or Allowable Cut Effect for Genetics, 8) Emphasis on Protection of Natural Values, 9) New Preferred Alternative. Specific timber management components of the alternatives include road construction, timber harvest, site preparation, reforestation, plantation protection, precommercial thinning, fertilization and control of competing vegetation. Significant environmental impacts of the New Preferred Alternative include wildlife habitat modification; soil erosion, landsliding and stream sedimentation; and increased timber harvest and employment.

3. Due to the addition of a New Preferred Alternative, a 60-day comment period on the FEIS is established. Comments will be accepted by the Roseburg District Manager until August 1, 1983, at the address listed below.

4. **For further information contact:**

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Summary

Introduction

This environmental impact statement (EIS) describes and analyzes the environmental impacts of implementing an updated 10-year (1984-1993) timber management plan for the Douglas and South Umpqua Sustained Yield Units in the Roseburg District, Oregon. Hereafter, the Sustained Yield Units will be referred to as the Roseburg Sustained Yield Units or simply the SYUs. This EIS applies to actions proposed for the 423,896 BLM-administered acres within the combined SYUs. These are primarily revested Oregon and California Railroad (O&C) lands and reconveyed Coos Bay Wagon Road (CBWR) lands. There are also scattered remnants of the original Public Domain (PD) lands.

Approximately 402,000 acres of the land area in the Roseburg SYUs is commercial forest land, with an additional 21,900 acres in non-commercial forest or non-forest categories. To the extent possible, non-forest, non-intensive commercial forest land and withdrawn areas have been used to partially provide a variety of forest resource uses, including habitat for threatened and endangered species and other wildlife, as well as watershed, recreation, scenic and other values.

In accordance with the National Environmental Policy Act, this EIS identifies impacts on the natural and human environment associated with nine alternatives. The EIS is based primarily on data collected and analyzed through the Bureau planning system which included extensive public involvement. Alternative 9, developed to meet new policy for O&C lands, is the Preferred Alternative. Eight other alternatives have been identified, providing a wide range of options for review and consideration. A basic assumption incorporated into the analysis is that sufficient funding and personnel will be available for implementation of any alternative.

Alternatives

Timber harvest under all alternatives would be accomplished predominately by clearcutting, with some single tree selection. Intensive timber management treatments would include construction of logging roads, site preparation with burning, mechanical means and herbicide application, planting coniferous trees (including genetically improved stock), plantation protection, plantation maintenance and release with herbicides or manual means, precommercial thinning and fertilization. Alternative 7 excludes the use of herbicides and fertilization.

Variables among alternatives include amounts of land allocated to timber production, types and amounts of intensive management practices, harvest scheduling and constraints on timber harvest to benefit other resource values. The minimum size of timber available for final harvest also varies by alternative. Harvest at the minimum size, reached in 40 to 50 years for all alternatives except 8, would begin in approximately the fifth decade. Harvest at the minimum size would continue for 6 to 23 decades, depending on the alternative. The proposed alternatives are:

1. Maximum Timber Production. This alternative maximizes timber production while meeting legal requirements to protect federally listed threatened and endangered species and cultural resources. It would allocate 386,622 acres of commercial forest land to intensive timber management and produce an annual timber sale program of 289 MM bd. ft. Operational and spatial constraints on timber harvest and stand regeneration would be minimized. The average minimum size of trees in stands available for final harvest would be 12.7 inches diameter breast height (dbh), normally reached in 40 years.

2. Emphasis on Timber Production. This alternative would allocate 360,580 acres of commercial forest land to intensive timber management with an additional 24,786 acres managed under modified area control. This would produce an average timber sale program of 267 MM bd. ft. annually. A longer harvest cycle (average of 250 years) under modified area control would provide timber harvest while protecting some resources in riparian areas, wildlife habitat and visual corridors. The average minimum diameter of trees in stands available for final harvest would be 14.4 inches dbh, normally reached in 50 years.

3. Lower Average Minimum Harvest Size. This alternative allocates 333,319 acres of commercial forest land to intensive timber management with an additional 52,047 acres managed under modified area control. Under the intensive timber production base, the average minimum diameter of trees in stands proposed for final harvest would be 12.7 inches dbh, normally reached in 40 years. This alternative would produce an average timber sale program of 256 MM bd. ft. annually.

4. Original Proposed Action. This alternative is identical to Alternative 3 except that minimum harvest size is increased, shortening the time to achieve a regulated forest. The minimum average tree diameter in stands selected for final harvest would be 14.4 inches dbh compared to 12.7 inches dbh under Alternative 3. The minimum harvest age would be 50 years, providing an average annual timber sale program of 249 MM bd. ft.

5. No Action (No Change). A required alternative in the EIS, this would constitute a continuation of the present annual timber sale program of 201 MM bd. ft. on 390,984 acres. It would continue the intensive management practices and constraints identified in the 1972 allowable cut determination. Non-timber allocations, limited to 400 acres, include buffers for recreation areas and sensitive visual corridors. Streamside buffers totaling 8,070 acres would be provided along third order and larger streams.

6. Habitat Diversity. This alternative emphasizes protection of natural and cultural values, while accommodating production of timber. It would allocate 222,357 acres to intensive forest management with an additional 119,924 acres managed under longer harvest cycles. The annual timber sale program would be 183 MM bd. ft. The minimum average diameter of trees in the intensive timber management stands available for final harvest would be 14.4 inches dbh, normally reached in 50 years.

7. No Herbicides, Fertilizer or Allowable Cut Effect for Genetics. This alternative is similar to Alternative 4 in timber base and treatments, except that herbicides and fertilizer would not be used. It would provide for continued planting of

genetically improved trees, but the allowable cut computation would not take credit for expected growth increases. The average timber sale program would be 176 MM bd. ft. annually. The minimum average diameter of trees in stands available for final harvest would be 13.6 inches dbh, normally reached in 50 years. Vegetation management practices in lieu of herbicides would be prescribed to approximately the same dollar level of investment as would be used for fertilizer and herbicide applications.

8. Emphasis on Protection of Natural Values.

Under this alternative, protection is provided for a variety of wildlife habitats, sensitive botanical species, cultural resources, visual resources, research natural areas, riparian areas and dispersed recreational activities. Approximately 262,436 acres of commercial forest land would be included in the constrained timber base. Minimum harvest ages would vary from 60 to 350 years. This would produce an annual timber sale program of 84 MM bd. ft. Fifteen-year spacing between harvest areas would be employed. Timber harvest would be allowed only when direct benefit to the protected resources would result. This is considered to be a full ecosystem alternative.

9. New Preferred Alternative. This alternative is a modification of the Original Proposed Action (Alternative 4) resulting from application of the new O&C Forest Resources Policy. The alternative seeks a high level of timber production (247 MM bd. ft./year) while managing for a variety of natural values and recreation opportunities. This alternative would allocate 331,637 acres of commercial forest land to intensive management with an additional 35,868 acres managed under modified area control. An estimated 23,565 acres of commercial forest land would be withdrawn to protect riparian areas, bald eagles, Research Natural Areas, botanical species and cultural resources.

Environmental Consequences

Air Quality

The major impact on air quality would be from slash burning. Particulate emissions range from 1,142 tons to 3,828 tons per year.

Soils

Impacts to soils are mainly due to road construction, landslides and compaction. Alternative 1 has the greatest long-and short-term impacts while Alternative 8 has the least. Production losses range from 2,647 equivalent acres under Alternative 8 to 9,136 equivalent acres under Alternative 1. Less significant impacts include nutrient losses, dry ravelling and topsoil removal.

Water Resources

Sediment yield would increase under Alternatives 1 to 3, decrease under Alternatives 4, 6, 7, 8 and 9. Water yield increases are expected under Alternatives 1 to 5 and 9, decreases under Alternatives 6, 7 and 8. Water temperature would increase under Alternative 1. Based on the sample 5-year sale plan, timber harvest activities planned in four municipal watersheds would increase water yield and sedimentation.

Vegetation

Alterations to plant community structure and longevity would be the most significant impacts to vegetation on lands scheduled for timber harvest. Acres scheduled for timber harvest over the next decade would range from 74,807 under Alternative 1 to 19,915 under Alternative 8. Mature and old-growth forest communities would be converted to early successional stage communities as slow-growing timber stands are replaced by young, fast-growing stands. Diversity and complexity of plant communities would diminish as maximum growth of commercial conifers is emphasized. Changes in plant communities and habitat could eliminate some plant species in the long term. Plant habitat altered by herbicides would increase under all alternatives except 7 and 8. Permanent road construction during the decade would eliminate vegetation from public land, ranging from 5,568 acres under Alternative 1 to 1,662 acres under Alternative 8.

Animals

Habitat diversity would increase in the short term. However, in all alternatives except 8, there would be significant long-term adverse impacts to some animal populations due to a decrease in habitat diversity and, in particular, a reduction in the mature and old growth components of the forest. Simplification of habitats due to intensive forest management practices would add to this impact.

Riparian habitat would be adequately protected by Alternatives 6, 8 or 9, but would be adversely impacted by all other alternatives. Increases in sediment yield in Alternatives 1 through 3 and increases in water temperature in Alternative 1 would negatively impact fish. Fish would increase in Alternatives 4, 6, 7, 8 and 9.

Snag-dependent wildlife would be greatly reduced in the long term, but impacts would be minimal in the short term. In the long term, elk numbers are expected to decline in all alternatives except 8. Elk numbers would increase in the short term in all alternatives.

There would be no known adverse impacts to any species listed by the Federal Government as threatened or endangered. The northern spotted

owl, listed by the State of Oregon as threatened, may be adversely impacted in the long term by all alternatives except 8.

Recreation

The impacts of timber management operations would be both beneficial and adverse, depending on the recreational experience desired. Visitor use increases or reductions may occur in certain areas as a result of impacts to specific recreational experiences.

Impacts would depend upon the approach taken to meet recreational needs. For the long term, Alternative 5 would fall short of meeting demand in many activities with identified area and facility needs. Alternative 1 emphasizes those activities having minimal impact on the commercial timber base and would not provide for new developed sites. Alternatives 2, 3, 4, 7, and 9 provide a variety of opportunities to meet most needs. Alternatives 6 and 8 emphasize dispersed activities, natural areas and the opportunity for site development, although Alternative 8 would not meet the need for off-road vehicle areas and trails. In the long term, area-wide elk hunting opportunities are expected to be adversely impacted under all alternatives except 6 and 8, while fishing opportunities are expected to be adversely impacted under Alternatives 1 through 3.

Cultural Resources

Appropriate measures would be taken to identify and protect cultural sites prior to ground-disturbing activities under all alternatives. Undiscovered cultural sites would be susceptible to considerable alteration and damage. Once a site is found, however, mitigation measures will be instituted to minimize or avoid damage. Under all alternatives, significant sites identified before, during and after logging would be managed to protect scientific and/or interpretive values.

Visual Resources

Under Alternative 8, visual resource conditions (scenic quality) would improve. Under Alternative 6, most highly scenic and/or sensitive areas would be protected with slight adverse impacts in some areas of the SYUs. Adverse visual impacts under Alternatives 2, 3, 4, 7, and 9 would be low to moderate. Many highly scenic and/or sensitive areas would be protected.

Under Alternatives 1 and 5, adverse visual impacts would be high with some protection provided for certain highly scenic and/or sensitive areas, primarily essential bald eagle habitat and existing recreation sites.

Areas of Critical Environmental Concern

Area of Critical Environmental Concern (ACEC) designation would provide guidelines to help achieve resource protection in those areas designated. All alternatives except 5 provide some level of ACEC designation greater than the existing situation. Designation ranges from four areas (600 acres) under Alternative 1 to seven areas (3,100 acres) under Alternatives 6 and 8.

Special Areas

Alternative 1 allows for designation of those areas which would not affect the commercial timber production base of the SYUs. Alternatives 2, 3, 4, 7, and 9 allow for designation of those areas identified as having significant natural values for science, recreation or education. Alternative 5 provides no additional natural area designation above that under the existing situation. Alternatives 6 and 8 emphasize the study and designation of natural areas. However, some sites (e.g., Red Pond, Dompier Creek Landslide) with natural and environmental education values may be adversely impacted if they are not designated or otherwise protected.

Human Health

The possibility of human health being impacted by the use of herbicides is related to the toxicity of the herbicide, the likelihood of exposure, and resulting dosage received. Based on current knowledge and the low risk of exposure on BLM-treated acres, an unreasonable risk to human health from continued, careful use of herbicides is unlikely. Herbicides would not be used under Alternative 7.

Energy Use

Fossil fuel energy would be consumed in all phases of the 10-year timber management plan. The annual energy consumption ranges from 218 billion Btu's (Alternative 8) to 834 billion Btu's (Alternative 1). The annual energy consumption attributable to the New Preferred Alternative (Alternative 9) would be approximately 716 billion Btu's.

Socioeconomics

Compared to timber harvest levels in Douglas County from 1976-1980, Alternatives 1 through 5 and 9 would increase employment in the timber industry and total local employment and earnings. The New Preferred Alternative (Alternative 9) could result in an increase of 440 timber industry jobs and 1,023 jobs in total. The greatest increase in jobs would be the result of Alternative 1, yielding 751 timber industry jobs and 1,746 total jobs. Alternative 8 would result in a net loss of 766 timber industry jobs and 1,780 total jobs.

Compared with continuation of the current timber management program, Alternatives 1 through 4 and 9 add economic activity. In this comparison, the New Preferred Alternative (Alternative 9) would add 340 timber industry jobs and 791 jobs in total. At the extremes, Alternative 1 could stimulate up to 1,514 new jobs while Alternative 8 could impact the regional economy by a reduction of 2,012 jobs.

Public revenues would be increased or maintained for Alternatives 1 through 5 and 9 and decline for Alternatives 6 through 8.

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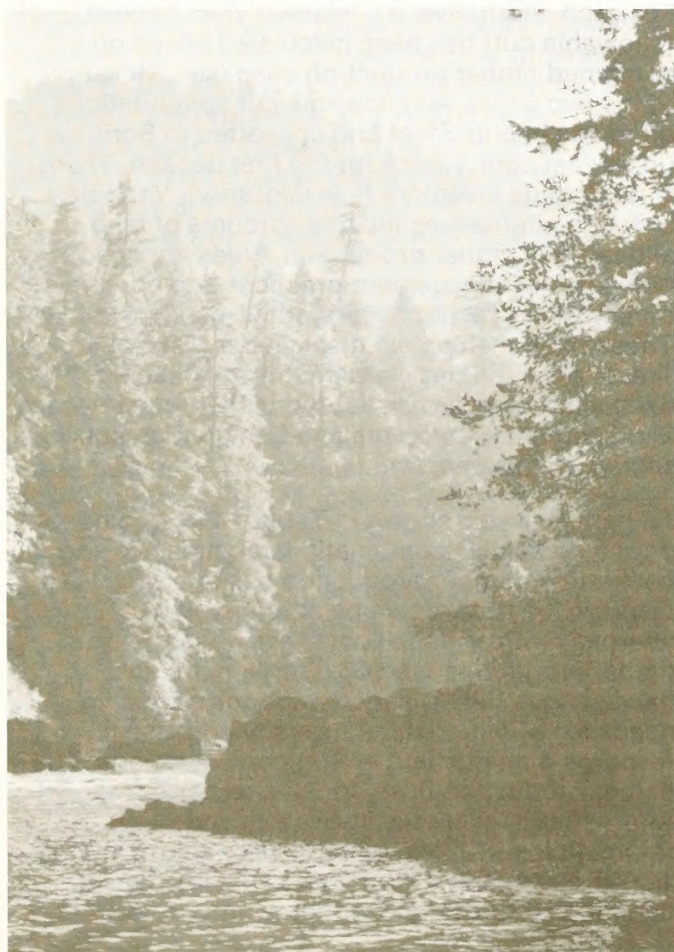
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Chapter 1 Description of Alternatives Including the Proposed Action



Purpose of and Need for the Action

The Bureau of Land Management (BLM) proposes to implement, beginning October 1, 1983, an updated 10-year timber management plan for the and South Umpqua Sustained Yield Units in the Roseburg Douglas District, Oregon (Figure 1-1, folded map in the back cover pocket). The Douglas and South Umpqua Sustained Yield Units will be referred to in this document as Roseburg Sustained Yield Units (SYUs). These are primarily revested Oregon and California Railroad (O&C) and reconveyed Coos Bay Wagon Road (CBWR) grant lands. There are also scattered remnants of the original Public Domain (PD) lands. In accordance with the National Environmental Policy Act (NEPA), this EIS identifies impacts on the natural and human environment associated with nine alternatives. The 10-year timber management plan for the two SYUs provides direction for management of these lands as required by the acts mentioned below.

The Bureau's principal authority and direction to manage the O&C and CBWR grant lands is found in the O&C Act of 1937 (50 Stat. 874; 43 U.S.C. 1181a., et seq.). The disposition of funds derived from the CBWR grant lands is described in an act approved on May 24, 1939 (43 U.S.C. 1181f-I et seq.). Under these acts, O&C and CBWR lands

classified as timberlands are to be managed under sustained yield principles in order to provide a permanent source of timber supply, watershed protection, stream flow regulation and recreational facilities. Intermingled PD lands were brought under sustained yield management principles by the Bureau's 1962 application to withdraw these lands from entry under all public land laws except certain disposal acts. Withdrawal was completed by Public Land Order 5490 in 1975 (40 FR 7450). In addition, many activities of the BLM are governed by the Federal Land Policy and Management Act of 1976 (90 Stat. 2743, 43 U.S.C. 1701). This law, often referred to as FLPMA, established policy for BLM administration of public lands under its jurisdiction.

Notwithstanding any provision of FLPMA, in the event of conflict with or inconsistency between FLPMA and the O&C Act of August 28, 1937 (50 Stat. 874; 43 U.S.C. 1181a-1181j), and the Act of May 24, 1939 (43 USC 1181f-l et seq.), insofar as they relate to management of timber resources and disposition of revenues from lands and resources, the 1937 and 1939 acts shall prevail.

The O&C Forest Resources Policy to be used in formulating decisions for BLM-administered forest lands in western Oregon was approved by the Director in March 1983. A copy of the policy is included in this EIS in Appendix A. To respond to the policy, an additional alternative has been included in this FEIS and is designated BLM's New Preferred Alternative (Alternative 9).

During an EIS scoping meeting held in Roseburg, Oregon (October 19, 1981), participants were asked to identify issues and alternatives to be addressed in this EIS. Chapter 1 includes alternatives identified during scoping and considered appropriate for full analysis. Alternatives identified but not considered appropriate for full analysis, and the rationale for these determinations are presented in Appendix B, which summarizes the scoping meeting. A discussion of the economic efficiency of the timber management program for the Original Proposed Action and Alternative 9 (New Preferred Alternative) is included in Appendix B.

During the planning process, criteria (Appendix C) were used to evaluate alternatives and select a proposed land use allocation alternative. The results of this evaluation, combined with public input, led to the original proposed land use alternative, Alternative 4 in this EIS.

Appendix C also addresses inventory methods used to arrive at the timber production base, allowable cut determination and other land use allocations. Acreages for land use allocations by alternative are shown in Appendix C, Table C-2.

The alternatives prepared for the SYUs identify various timber harvest levels, management practices and mitigating measures to protect the land and other resources. This information is described in detail in the remainder of this document.

Alternatives

Planning for the Roseburg Sustained Yield Units (SYUs) focused on the 423,896 acres of public land administered by BLM. Except for 280 acres in Lane County and 400 acres in Jackson County, all lands are in Douglas County. BLM administers 29 percent of the total land within the Roseburg SYUs (Table 1-1).

There are nine alternatives, including the Original Proposed Action (Alternative 4) and the New Preferred Alternative (Alternative 9), for which impacts will be analyzed in Chapter 3:

1. Maximum Timber Production (Max. Tbr.)
2. Emphasis on Timber Production (Emp. Tbr.)
3. Lower Average Minimum Harvest Size (Lo MHS)
4. Original Proposed Action (OPA)
5. No Action
6. Habitat Diversity (HD)
7. No Herbicides, Fertilizer or Allowable Cut Effect for Genetics (No Herb.)
8. Emphasis on Protection of Natural Values (Full Eco.)
9. New Preferred Alternative (NPA)

For each alternative, a sustained yield harvest level (allowable cut) has been calculated based on the combined timber production base (see Glossary) of the two SYUs. All allowable cut computations are made in cubic feet and converted to Scribner board feet equivalence for the first decade. There is no surplus inventory (see Glossary). Variables between alternatives include amounts of land allocated to timber production, types and amounts of intensive management practices and constraints on timber harvest to benefit other resource values. These relationships are displayed in Table 1-2. Treatments and design elements applicable to each alternative are discussed in the Forest Management Treatments and Design Elements section of this chapter.

All harvest levels shown in Table 1-2 are computed on the respective combinations of intensive and constrained timber production bases. Table 1-3 displays the breakdown by category and alternative. On areas allocated to constrained timber production (see Glossary), minimum harvest ages (MHA) vary to recognize specific needs for wildlife habitat diversity and visual resource management (VRM) considerations. The timber production base, for all alternatives except Alternative 5, excludes fragile site and reforestation problem withdrawals (approximately 11,000 acres) and a minimum of 4,448 acres of commercial forest land withdrawn to protect

Table 1-1 Land Jurisdiction in Acres¹ by County within Roseburg Sustained Yield Units

County	BLM ²	U.S. Forest Service	State	Local Govt. & Private	Total
Lane	280	0	0	0	280
Jackson	400	0	0	0	400
Douglas	423,216	978	3,948	1,032,150	1,460,292
Totals	423,896 ³	978	3,948	1,032,150	1,460,972

¹ Acreage figures for BLM-administered lands are derived from master title plats. Other acreage figures are from Resource Atlases published by O.S.U. Extension Service, 1964.

² O&C lands make up 93 percent of the public lands administered by BLM. PD and CBWR lands comprise the remaining 4 and 3 percent, respectively.

³ Refer to Appendix C, Table C-2.

certain natural and cultural resources. Appendix C explains these withdrawals in more detail (Appendix C, Table C-2).

Alternatives 2, 3, 4, 7 and 9 include modified area control (see Appendix C), which is a process for managing a given number of acres under a special timber harvest regime. In the Roseburg SYUs, 52,047 acres are planned to be managed under the modified area control concept for Alternatives 3, 4 and 7, 35,868 acres for Alternative 9 and 24,786 acres for Alternative 2. These acres are primarily managed for riparian, spotted owl, old growth and visual values and are generally located within a corridor. This process would yield a timber harvest of approximately 4 MM bd. ft. in Alternative 2, 6 MM bd. ft. in Alternative 9 and 9 MM bd. ft. in Alternatives 3, 4 and 7. Harvest methods would vary, ranging from clearcut to individual tree selection.

Alternative 1 - Maximum Timber Production

Timber production would be maximized while meeting legal requirements to protect federally listed threatened and endangered species and cultural resources. This alternative would allocate 386,622 acres to intensive timber management and provide an annual timber sale program of 289 MM bd. ft. through accomplishment of various intensive timber management practices (see Table 1-2). Lands not allocated to timber production (4,448 acres) would be managed for other resources such as cultural, established recreation sites and threatened and endangered species. Timber available for final harvest would have an average size of 12.7 inches dbh, normally reached in 40 years. Harvest at this size would occur during the 5th through 17th decades of the 400-year projection period.

This alternative provides for harvest of stream buffers consistent with the Oregon Forest Practices Act; however, specific protection for riparian zones, wetlands and northern spotted owls would not be provided.

Alternative 2 - Strong Emphasis on Timber Production

Under this alternative, 360,580 acres of commercial forest land would be allocated to intensive timber management with an additional 24,786 acres managed under modified area control (Appendix C). This would provide an annual timber sale program of 267 MM bd. ft. Stream buffers averaging 200 feet wide would be provided on third order or greater streams managed under modified area control. Approximately 5,700 acres of commercial forest land would be withdrawn from the allowable cut base to provide for other resource uses (Appendix C, Table C-2). Timber available for final harvest in the intensive timber base would have an average size of 14.4 inches dbh, normally reached in 50 years. Harvest at this size would occur from the 5th through 10th decades during the 400-year projection period.

Alternative 3 - Lower Average Minimum Harvest Size

Allocation of 333,319 acres of commercial forest land to intensive timber management would occur under this alternative. An additional 52,047 acres, including an average 200-foot buffer on third order and greater streams and selected VRM lands and wildlife habitat, would be managed under modified area control (Table 1-3 and Appendix C, Table C-4). This would produce an average timber sale program of 256 MM bd. ft. annually. Approximately 5,700 acres of commercial forest land would be withdrawn from the allowable cut base to provide for other resource uses.

Table 1-2 Comparison of Alternatives by Treatment - First Decade

	Alt. 1 Max. Tbr.	Alt. 2 Emp. Tbr.	Alt. 3 Lo MHS	Alt. 4 OPA	Alt. 5 No Action	Alt. 6 HD	Alt. 7 No Herb.	Alt. 8 Full Eco.	Alt. 9 NPA
Intensive Timber Production Base ¹ (acres)	386,622	360,580	333,319	333,319	377,098	222,357	261,191	0	331,637
Constrained Timber Production Base ¹ (acres)	0	24,786	52,047	52,047	13,886	119,924	52,047	262,436	35,868
Annual Harvest									
Total Million bd. ft.	289	267	256	249	201	183	176	84	247
Total Million cu. ft.	47.46	43.81	42.03	41.00	33.03	30.28	28.94	13.83	40.47
Treatments²									
Transportation System (miles/acres)									
New Construction ³	928,556	854,512	822,493	800,480	616,369	588,352	551,306	277,166	794,476
Reconstruction	641, 0	590, 0	568, 0	552, 0	425, 0	406, 0	381, 0	191, 0	548, 0
Timber Harvest (acres)									
Clearcut	66,780	61,411	59,152	57,548	44,294	42,298	39,659	19,915	57,093
Mortality Salvage	4,138	3,830	3,325	3,347	21,949	2,362	2,646	0	3,328
Commercial Thinning	3,889	3,611	3,479	3,479	7,357	2,778	2,802	0	1,383
Site Preparation (acres)									
Broadcast Burning (slash disposal)	52,088	47,901	46,139	44,887	34,549	32,992	30,659	15,534	44,532
Herbicide	60,770	55,884	53,828	52,369	40,308	38,491	0	18,123	51,955
Manual	2,003	1,842	1,775	1,726	1,329	1,269	23,790	597	1,713
Mechanical	4,675	4,299	4,141	4,028	3,101	2,961	2,776	1,394	3,997
Planting (acres)									
Initial plant ⁴	61,212	56,287	54,220	52,748	40,598	38,770	36,353	18,253	52,329
Replant or Interplant	18,364	16,886	16,266	15,824	12,179	11,631	10,906	5,476	15,698
Plantation Protection (acres)	36,061	33,162	31,942	31,076	23,919	22,841	21,416	10,754	30,830
Plantation Maintenance and Release ⁵ (acres)	46,746	42,988	41,406	40,284	31,006	29,609	7,300	13,940	39,965
Precommercial Thinning (acres)	44,576	42,240	40,755	40,755	12,326	31,370	37,319	0	40,449
Fertilization (acres)	61,270	57,984	56,029	56,029	0	43,659	0	0	55,646

¹ See Glossary.² Each treatment is described in detail following description of the alternatives.³ Figured at the rate of 6 acres/mile of road including landings.⁴ Under all alternatives except Alternative 8, 15,200 acres would be planted with genetically improved stock.⁵ All to be accomplished with herbicides except in Alternative 7 where manual methods are to be employed exclusively.**Table 1-3 Derivations of Timber Production Base Acreage**

Alternatives Including the Proposed Action

	Alt. 1 Max. Tbr.	Alt. 2 Emp. Tbr.	Alt. 3 Lo MHS	Alt. 4 OPA	Alt. 5 No Action	Alt. 6 HD	Alt. 7 No Herb.	Alt. 8 Full Eco.	Alt. 9 NPA
INTENSIVE TIMBER PRODUCTION BASE	386,622	360,580	333,319	333,319	377,098	222,357	261,191	0	331,637
CONSTRAINED TIMBER PRODUCTION BASE									
VRM (250 year modified area control)	0	3,682	2,646	2,646	0	0	2,646	0	2,658
VRM (MHA-130)	0	0	0	0	0	31,345	0	49,376	0
Wildlife (250 year modified area control)	0	21,104	49,401	49,401	0	0	49,401	0	33,210
Wildlife (MHA-60)	0	0	0	0	0	0	0	107,180	0
Wildlife (MHA-250)	0	0	0	0	0	76,359	0	83,211	0
Wildlife (MHA-350)	0	0	0	0	0	12,220	0	22,669	0
TOTAL CONSTRAINED	0	24,786	52,047	52,047	13,886	119,924	52,047	262,436	35,868
TOTAL TIMBER PRODUCTION BASE ¹	386,622	385,366	385,366	385,366	390,984	342,281	313,238	262,436	367,505

¹ Refer to Land Use Allocation, Appendix C, Table C-2

Timber stands available for final harvest in the intensive timber base would have an average size of 12.7 inches dbh, normally reached in 40 years. In actuality, harvest at this size would occur from the 5th through the 28th decades during the 400-year projection period. A regulated forest on intensive timber production lands would be reached in about the 30th decade. It is assumed that by the time a regulated forest is achieved, the annual harvest level from the lands allocated to timber production under this alternative and the Original Proposed Action (Alternative 4) could be increased to the highest level sustainable from this timber management base (estimated to be approximately 303 MM bd. ft.).

Alternative 4 - The Original Proposed Action

This alternative allocates the same acreages to timber and other resource management as Alternative 3. However, timber available for final harvest in the intensive timber base would have an average size of 14.4 inches dbh, normally reached in 50 years. This would produce an average annual timber sale program of 249 MM bd. ft. Harvest at this size would occur from the 4th through the 10th decades during the 400-year projection period. A regulated forest on intensive timber production lands would be reached in about 13 decades. Management elements would be identical to those in Alternative 3 (see Tables 1-2, 1-3 and Appendix C, Tables C-3, C-4).

Alternative 5 - No Action

Alternative 5 constitutes a continuation of the present allowable cut of 201 MM bd. ft. from 390,984 acres allocated to timber production. Continuation of the same management practices, level of application and constraints used in the 1972 allowable cut calculation is assumed. Management trends (such as reduced tractor yarding) established over the past decade would be continued. Minimal protection would be provided for some highly scenic areas, recreational sites and wildlife habitat. Non-timber allocations, limited to 400 acres, include buffers for recreation areas and sensitive visual corridors. Streamside buffers totaling 8,070 acres would be provided along third order and larger streams (Table C-4). Other land use allocations (Appendix C, Table C-2) and management objectives (Table 1-2) proposed under this alternative are those incorporated in the 1972 Timber Management Plan for its second decade of application.

Alternative 6 - Habitat Diversity

Protection of some natural and cultural values, while accommodating timber production and other commodities, would be provided under Alternative 6. It would allocate 222,357 acres to intensive forest management with an additional 119,924 acres managed under longer harvest

cycles. The annual timber sale program would be 183 MM bd. ft. Timber available for final harvest in the intensive timber base would have an average size of 14.4 inches dbh, normally reached in 50 years. Stream buffers at least 250 feet wide would be provided on third order and greater streams. In addition, 48,790 acres of commercial forest land would be withdrawn from the allowable cut base to provide for other resource uses (Appendix C, Table C-2).

Alternative 7 - No Herbicides, Fertilizer or Allowable Cut Effect for Genetics

This alternative differs from Alternative 4 in that the forest management treatments of herbicide and fertilizer applications would not be incorporated. Without the use of herbicides to control competing vegetation, approximately 72,100 acres would be withdrawn from the timber production base due to reforestation problems. Control of vegetation for timber management by using biological, mechanical or manual means would be prescribed to approximately the same dollar level of investment as would be used for herbicide and fertilizer applications in Alternative 4 to provide a means of comparison.

Alternative 7 would provide for continued planting of genetically improved trees, but the allowable cut computation would not take credit for expected growth increases. This would produce an average annual timber sale program of 176 MM bd. ft. Timber available for final harvest in the intensive timber management base would have an average size of 13.6 inches dbh, normally reached in 50 years.

Alternative 8 - Emphasis on Protection of Natural Values

In this alternative, protection would be provided for a variety of wildlife habitats, sensitive botanical species, visual resources, research natural areas, riparian areas and dispersed recreational activity areas. Unharvested stream buffers, varying in width by stream order from 150 to 500 feet, would be provided on all streams. This is considered to be a full ecosystem alternative.

No land would be included in the intensive timber base. Treatments not planned for Alternative 8 are mortality salvage, commercial and precommercial thinning, fertilization and genetically improved stock (Table 1-2). Approximately 262,436 acres of commercial forest land would be included in the constrained timber base (Table 1-3). Minimum harvest age varies from 60 years to 350 years. This would produce an average timber sale program of 84 MM bd. ft. annually. Fifteen-year spacing between adjacent harvest areas would be employed. In addition, 128,634 acres of

commercial forest land would be withdrawn from the allowable cut base to protect non-timber resource values (Appendix C, Table C-2). Harvest from these areas would be allowed only when of direct benefit to the protected resources.

Alternative 9 - New Preferred Alternative

This alternative seeks a high level of timber production while managing for a variety of natural values and recreation opportunities. This alternative is similar to Alternative 4, except that 18,332 acres of riparian area along third order and greater streams would be withdrawn from the allowable cut base.

Under this alternative 331,637 acres of commercial forest land would be allocated to intensive timber management with an additional 35,868 acres managed under modified area control. This would produce an average annual timber sale program of 247 MM bd. ft. Timber available for final harvest in the intensive base would have an average size of 14.4 inches dbh, normally reached in 50 years. Harvest at this size would occur from the 4th through the 10th decades during the 400-year projection period. A regulated forest on intensive timber production lands would be reached in about 13 decades. An additional 5,233 acres of commercial forest land would be withdrawn from the allowable cut base to provide for cultural and botanical resources, bald eagles and recreation sites (Table C-2).

Forest Management Treatments and Design Elements

Table 1-2 displays, in typical sequence, the types and levels of treatments for each alternative. Following harvest by clearcut or single tree selection, these treatments are used to achieve prompt reforestation and to increase subsequent growth of commercial coniferous species. The following discussion of treatments will be in the same order as listed in Table 1-2.

Not every treatment listed in Table 1-2 would be applied to every acre. A number of treatment combinations are possible and could be employed. The purpose of this section is to elaborate on what each treatment entails and quantify the magnitude of the actions. Treatments would be identified and scheduled through application of the recently adopted forest data system (Solutions to Operations and Reforestation Monitoring Systems-STORMS 1981). For those actions required in

timber sale contracts, the final determination of treatment needs would be made during timber sale planning.

Contracts, usually awarded on a competitive basis, are the means of accomplishing all timber harvest and many forest development practices. The standard and special provisions (which include mitigating measures) in a contract set forth the performance standards to be followed by the contractor in carrying out the action in accordance with applicable laws, regulations and policies. In contract preparation, selection of special provisions is governed by the scope of the action to be undertaken and the physical characteristics of the specific site. The standard provisions of the basic timber sale contract, Bureau Form 5450-3, are applicable for all timber sales. Limitations on timber harvesting and related activities, as identified in the Church Report (U.S. Congress, Senate 1973) and analyzed in the BLM Timber Management - Final EIS-1975, have been adopted by BLM. Bureau manuals and manual supplements provide a variety of approved special provisions for use, as appropriate, in individual contracts. The combination of selected special provisions constitutes Section 41 of the timber sale contract (Form 5450-3).

Prior to any vegetative or ground manipulation, BLM requires a survey of the project site for plants and animals listed or proposed for listing/as threatened and endangered species. If a project might affect any federally listed or proposed threatened or endangered species or its critical habitat, every effort would be made to modify, relocate or abandon the project in order to obtain a no effect determination. If BLM determines that a project cannot be altered or abandoned, consultation with the U.S. Fish and Wildlife Service would be initiated (50 CFR 402; Endangered Species Act of 1973, as amended).

Whenever evidence of historic or prehistoric occupation is identified during BLM activities, special surveys are undertaken to determine possible conflicts in management objectives. In addition, a Class III (complete) cultural resources inventory is required on all areas to be subjected to ground disturbing activities. This is accomplished in the pre-planning stage of a treatment and the results analyzed in the environmental assessment addressing the action (BLM Manual 8100, Cultural Resources Management). When a cultural resource is discovered during timber harvest or associated activities, operations in proximity are immediately suspended and may only resume upon receipt of written instructions from the authorized BLM officer. Procedures under 36 CFR 800 would then be followed, including consultation with the State Historic Preservation Officer in the determinations of eligibility and effects.

Transportation System

Oregon Manual Supplement, Release 5-115 of April 10, 1975, would be used in preparing road construction requirements for timber sale contracts. Engineering terminology and types of construction equipment are defined in the manual supplement and specifications for all aspects of construction, reconstruction and surfacing are provided.

Methods of slope protection are provided to avoid collapse of cut-and-fill embankments. Specifications for rock pits and quarries include provisions for minimum visual intrusion, drainage and control of runoff and restoration following use.

Special stipulations are provided for the installation of stream crossing structures, such as corrugated metal culverts, so that fish passage is not impeded. These measures may include imposing gradient limitations for the structures and/or installing baffles to reduce water velocity through the culverts.

One section of the manual supplement provides design features to control and minimize erosion during road construction and throughout the design life of the road. Another section addresses soil stabilization practices, including planting, seeding, mulching and fertilizing for establishment of soil-binding vegetation.

Road reconstruction is proposed for all alternatives. The miles of road to be reconstructed range from 641 under Alternative 1 to 191 miles under Alternative 8 (Table 1-2). Similarly, the miles of new, permanent road to be constructed during the decade would range from 928 miles under Alternative 1 to 277 miles under Alternative 8 (Table 1-2). Construction standards, i.e., stream crossing, subgrade width, ditch, cut-and-fill slope requirements, and type of surfacing, would be determined during the annual timber sale planning process. Basic construction operations as well as a brief history of transportation systems are described in detail in the programmatic environmental impact statement BLM prepared on timber management in the western United States (USDI, BLM 1975), hereafter referred to as the BLM Timber Management FEIS.

Road closures are planned for all alternatives where significant impacts to wildlife are occurring or likely to occur as a result of uncontrolled vehicle access.

Timber Harvest

The primary timber harvest method to be employed during the next 10-year period would be clearcutting. An estimated 78 percent of the proposed final harvest by clearcutting (see Table 1-2 for proposed acreages by alternatives) would

be accomplished by high lead cable yarding systems. Another 9 percent would be accomplished by cable yarding systems specifically providing partial log suspension and 5 percent providing full log suspension. The remaining 8 percent would be harvested by tractor skidding, of which 19 percent would be accomplished using "low ground pressure" equipment. This variety of logging systems is a design feature employed primarily for watershed protection and reduced soil damage. Refer to the BLM Timber Management FEIS for a detailed description of logging systems.

Timber harvesting limitations pertaining specifically to clearcutting, as identified in the Church Report (U.S. Congress, Senate 1972), have been adopted by BLM. These limitations are incorporated in the Oregon Manual Supplement 5424, which lists special provisions or stipulations for use in the logging requirements portion of a timber sale contract.

Acreages allocated to the constrained timber base, including those managed under modified area control, would be harvested by individual tree selection, shelterwood and/or clearcutting methods. (Also, see discussion on Modified Area Control in Appendix C.)

Single tree selection would be employed for harvest of dead and dying timber (mortality salvage) in stands not scheduled for harvest within the 10-year period. Mortality salvage would take place on lands in the intensive timber production base and on all other lands in the event of a major catastrophic event or when beneficial to wildlife or fish. The variance in acreages proposed for mortality salvage (Table 1-2) reflects the differences in over-mature timber available under each alternative.

Commercial thinning would be applied to intensively managed timber stands between the ages of 30 and 60 years. The interval of treatment (ranging from 10 to 30 years) would vary according to site characterization with poor sites having longer intervals. Acreages proposed for commercial thinning by alternative are presented in Table 1-2.

Site Preparation

Site preparation procedures are used to prepare newly harvested and inadequately stocked areas for the planting of a new crop of trees. Four types of site preparation treatments (broadcast burning, herbicides, mechanical and manual) are planned within the SYUs for the proposal period (Table 1-2).

The main site preparation treatment would be broadcast burning to control competing vegetation, provide planting site accessibility and reduce the fire hazard. Burning would occur at

times approved by the Oregon State Department of Forestry which administers the Smoke Management portion of the State's Air Quality Implementation Plan. Acreage requiring slash disposal by broadcast burning (Table 1-2) may receive one or more of the following site preparation treatments.

Site preparation treatment using herbicides (Table 1-4) is included in all alternatives except Alternative 7. Herbicides are used to increase plantation survival rate by control of grasses, forbs, brush and noncommercial tree species. These treatments improve the potential for success by reducing competition for light,

Table 1-4 Estimated Ten-Year Use of Herbicides

						Estimated Acres								
					Application Rate ¹ (lbs./Acre)	Alt. 1 Max. Tbr.	Alt. 2 Emp. Tbr.	Alt. 3 Lo MHS	Alt. 4	Alt. 5 No Action	Alt. 6	Alt. 7*	Alt. 8 Full Eco.	Alt. 9
Chemical	Method	Season	Carrier	Target Species										NPA
SITE PREPARATION														
Atrazine-Dowpon	Aerial	Spring	Water	Annual & Perennial grasses	4 lbs. ea.	33,302	30,624	29,498	28,698	22,089	21,093		9,931	28,471
Atrazine Dowpon-2,4D	Aerial	Spring	Water	Grasses, forbs, brush	4/4/2 lbs.	4,315	3,968	3,822	3,718	2,862	2,733		1,287	3,689
Velpar	Aerial	Spring	Water	Grasses, forbs	1 lb.	6,563	6,036	5,813	5,656	4,353	4,157		1,957	5,611
Velpar	Aerial	Spring	Water	Annual & Perennial grasses & forbs	2 lbs.	3,525	3,241	3,122	3,037	2,338	2,233		1,051	3,013
Roundup (Glyphosate)	Aerial	Spring	Water	Annual & Perennial grasses & forbs	1 qt. (1 lb.)	425	391	377	367	282	270		127	364
Roundup	Aerial	Late Summer	Water	Deciduous brush & hardwoods	1-1/2 qts. (1-1/2 lb.)	8,812	8,103	7,805	7,593	5,845	5,581		2,628	7,533
Garlon 4	Aerial	Early Summer	Water	Brush & other herbaceous vegetation	4-8 lbs.	912	838	807	786	605	577		272	780
Roundup	Ground (back-pack)	Spring	Water	Annual & Perennial grasses	1% solution (1 lb./ac. approx.)	668	615	592	576	443	423		199	571
Roundup	Ground (back-pack)	Spring	Water	Annual & Perennial grasses & forbs	2% solution (1 lb./ac. approx.)	2,248	2,068	1,992	1,938	1,491	1,424		671	1,923
PLANTATION MAINTENANCE & RELEASE														
Atrazine-Dowpon	Aerial	Spring	Water	Annual & Perennial grasses	4 lbs. ea.	12,154	11,177	10,766	10,474	8,062	7,698		3,624	10,391
Atrazine Dowpon-2,4-D	Aerial	Spring	Water	Annual & Perennial grasses, brush & hardwoods	4/4/2 lbs.	2,478	2,278	2,195	2,135	1,643	1,569		739	2,118
2,4-D	Aerial	Spring	Water & Oil	Evergreen brush & hardwood species, Herbaceous vegetation	3 lbs.	3,973	3,654	3,520	3,424	2,636	2,517		1,185	3,397
Roundup	Aerial	Late Summer	Water	Deciduous brush & hardwoods	1-1/2 qts. (1-1/2 lbs.)	12,949	11,908	11,469	11,158	8,589	8,202		3,861	11,070
Velpar	Aerial	Spring	Water	Annual & Perennial grasses & forbs	1-2 lbs.	5,282	4,857	4,679	4,552	3,504	3,346		1,575	4,516
Asulox	Aerial	Late Summer	Water	Bracken fern	3.3 lbs. (1 gal.)	3,272	3,009	2,898	2,820	2,170	2,073		976	2,798
Garlon 4	Aerial	Spring	Water & Oil	Evergreen & deciduous brush & hardwoods	1-2 lbs.	3,319	3,053	2,939	2,861	2,201	2,102		990	2,838
Garlon 4	Ground	All Seasons	Diesel	Bigleaf maple (Basal Spray)	1% Solution-1 gal./100 gal. mix (4 lbs./ac./approx.)	514	473	456	443	341	326		153	439
Garlon 3A	Hand	All Seasons	Dilute with water 1:1	Bigleaf maple, Madrone, Red alder (hack/squirt)	1 mL Solution per inch dia. (1/2 lb./ac. approx.)	1,075	989	952	927	713	681		321	920
Tordon 101R (picloram-2,4-D)	Hand	Spring/Summer	None undiluted	Madrone & other hardwoods (Hack/Squirt)	1 mL per inch dia. (1/2 lb./ac.)	1,730	1,590	1,532	1,490	1,147	1,095		516	1,478

¹ Active ingredients (in total pounds) applied may be figured by multiplying the application rate by the estimated acres under each alternative.

* Alternative 7 does not employ the use of herbicides.

moisture and soil nutrients during the tree seedling establishment period. Application and monitoring of herbicides would be in accordance with BLM's FEIS Vegetation Management with Herbicides: Western Oregon 1978 through 1987. See the following Plantation Maintenance and Release section for more detail. Alternative 7, which does not incorporate herbicide use, employs the manual method of paper mulching on slopes less than 65 percent.

Manual site preparation would occur on some acreage during the next decade (Table 1-2). Treatments would consist of paper mulching, scalping or brush cutting and piling for burning.

Mechanical site preparation would consist of scarification and piling or windrowing of slash, brush and unmerchantable stems. Bulldozers equipped with a brush blade would normally be used. However, this type of equipment would be restricted to areas with slopes less than 35 percent, low soil moisture conditions and suitable soil types.

Planting

To achieve adequate reforestation within five years following harvest on timber production lands, harvested areas would be planted with commercial coniferous species (Douglas-fir, grand fir, incense cedar, Jeffrey pine and ponderosa pine) within one year of the completion of site preparation. Planting stock is nursery grown from seed collected on sites and at elevations similar to the specific project area. Genetically improved stock is also being nursery grown and would be scheduled for planting on 15,200 acres. The broad selection of parent trees for genetically improved stock is intended to maintain genetic diversity (BLM Instruction Memorandum OR 79-334).

Reforestation experience in the Roseburg SYUs shows that target stocking levels of 245 to 320 trees per acre, depending on site class, cannot always be achieved by the initial planting. Post-treatment surveys would be conducted to determine the rate of survival and when replanting or interplanting would be required to meet stocking standards.

Plantation Protection

Estimated acreages that would require some type of protective treatment are shown in Table 1-2. Treatments would include protection from the sun by shading and placing plastic tubing or netting over seedlings to protect them from damage by deer, elk, porcupine or other small animals. Porcupine would be trapped when they occur in significant numbers in a plantation. The total number of acres requiring each of these treatments would be determined in conjunction with normal reforestation surveys.

Plantation Maintenance and Release

Maintenance treatments promote the survival and establishment of coniferous seedlings. Release treatments reduce competition for light, moisture and nutrients between shrubs or grass and existing commercial coniferous seedlings and promote dominance and growth of established coniferous trees.

In recent harvest areas, grass, forbs, shrubs and hardwoods often suppress the growth of conifer seedlings. The degree and type of competition varies with the individual site. On dry sites, grass, forbs and shrubs are strong competitors for water, while elsewhere hardwoods grow rapidly enough to shut out essential light and compete for water during the dry summer. With reduced competition, the conifers rapidly grow beyond the point where they can be overtopped and further suppressed by surrounding vegetation. When this growth situation is achieved (approximately 3 to 10 years from planting), there would be no further control of competing vegetation necessary.

Each area proposed for maintenance or release treatment would undergo a site specific environmental assessment. During this analysis, alternative methods of vegetation control are considered, including chemical, manual and mechanical means. Assessments addressing specific herbicide projects are prepared and tiered under BLM's FEIS Vegetation Management with Herbicides: Western Oregon - 1978 through 1987.

In recent years, herbicides have been used effectively to inhibit the growth of competing vegetation, thus increasing available water, nutrients and light for suppressed conifers. Herbicides are applied aerially or by several ground methods. The method selected is dependent on costs, topography, limits of the equipment, kind and dispersion of target plants, potential environmental impacts and biological conditions. Most herbicide applications in the Roseburg SYUs would be by helicopters equipped with positive shut-off spray systems to limit herbicide application to the target areas. Helicopter application would be accomplished under contract through the competitive bidding process.

Timing of herbicide treatment is stringently controlled in relation to specified weather conditions such as temperature, humidity and wind. There is full authority for ordering cessation of operations based on adverse field conditions. Both equipment and operators are frequently checked by field project supervisors. Only registered chemicals would be used and in accordance with labeled instructions on the container. Handling, storage and application of chemicals would be in accordance with the

Oregon Forest Practices Act (see the Interrelationships section, State and Local Government).

Protective stream buffers (determined according to stream classification and herbicide used) and monitoring of herbicide application are as described in the FEIS mentioned above. Continuous administration of spraying contracts in progress is required. Water samples of selected streams would be taken prior to spraying to establish baseline quality and at specified intervals thereafter.

The use of herbicides for plantation maintenance and release is included in all alternatives except for Alternative 7 (Table 1-2). Table 1-4 shows the chemicals, target species and estimated acreage of herbicide use as proposed during the 10-year period.

Precommercial Thinning

Under all alternatives except Alternative 8, precommercial thinning would be applied to timber stands between 10 and 20 years of age which contain over 500 stems per acre (estimated to be 60 percent of the stands). This treatment concentrates available nutrients, moisture and light into those trees which would be the eventual crop for future harvest.

The number of trees cut per acre during precommercial thinning is dependent on the density of the stand before thinning. While average spacing is approximately 12 feet, the number of crop trees left may vary between 245 and 320 per acre. Contract specifications, emphasized by field instructions to crews, cover desired spacing of crop trees and criteria for crop tree selection.

Fertilization

Areas precommercially and commercially thinned and portions of areas where stocking control was achieved through plantation spacing would be fertilized (Table 1-2) except in Alternatives 5, 7 and 8. Continuing studies and analysis will be conducted to determine fertilizer response and economic effectiveness of planned projects. The average application is expected to be 200 pounds of nitrogen per acre. Stands would be fertilized when precommercially thinned, commercially thinned and at 10-year intervals thereafter until 10 years before final harvest. In addition to acceleration of growth for up to seven years following treatment, fertilization reduces shock associated with thinning.

Comparison of Impacts

This section compares in tabular form (Table 1-5) the impacts of each alternative, including the New Preferred Alternative (Alt. 9) and the Original Proposed Action (Alt. 4). While impacts have been

described in detail in Chapter 3, Table 1-5 is presented to assist decisionmakers and reviewers by summarizing the impacts of each alternative, thereby permitting major issues to be defined and analyzed.

Two areas of major impacts are wildlife habitat and economic conditions. The greatest total habitat modification would occur in Alternative 1. The greatest old growth habitat modification would occur in Alternative 5, where about 70 percent of old growth habitat would be removed by the end of the first decade. Alternative 8 would result in an increase of old growth habitat over the long term; all other alternatives would result in long-term decreases of old growth habitat.

Alternative 1 would be most beneficial to the economic situation, providing about 1,500 more jobs than would be provided by continuation of the existing program. Alternative 8 would have the greatest adverse impact, providing approximately 2,000 fewer jobs than would a continuation of the existing program (Alternative 5).

Other areas of impact are soil erosion and sediment yield. Alternative 1 would cause the most erosion; Alternative 8 the least. Cumulative sediments produced as a result of timber management activities would increase from levels in the past decade by 26 percent in Alternative 1 and decrease by 100 percent in Alternative 8 where no new sedimentation is expected. Alternative 8 would have the least adverse impacts attributable to either soil erosion or sediment yield.

Implementation Final Decision

After release of the final EIS (and following the comment period) the District Manager will review the public comments on both draft and final EISs and prepare a Record of Decision. The recommended decision may be to select one of the EIS alternatives intact, or to blend features from several alternatives that fall within the range of actions analyzed in the EIS. The final decision will be made by the State Director. Significant conflicts, alternatives, environmental preferences and economic and technical considerations will be addressed in the Record of Decision, which is expected later in 1983.

Monitoring and Studies

BLM land management programs are monitored in various ways. Currently, forest management practices are monitored primarily through administration of the contracts under which most actions are authorized. Timber sale contracts are inspected at least once a week, when active, and more often if sensitive operations are in progress.

Table 1-5 Summary of Impacts

Environmental Components Impacted	Units of Measure	Existing Situation	Alt. 1 Max. Tbr.	Alt. 2 Emp. Tbr.	Alt. 3 Lo MHS	Alt. 4 OPA	Alt. 5 No Action	Alt. 6 HD	Alt. 7 No Herb.	Alt. 8 Full Eco.	Alt. 9 NPA	Remarks
Air Quality												
Nitrous oxides	tons/year		365	335	323	314	242	231	217	109	312	
Hydrocarbons	tons/year	NA	2,279	2,096	2,019	1,964	1,512	1,443	1,353	680	1,948	
Particulates	tons/year		3,828	3,521	3,391	3,299	2,539	2,425	2,274	1,142	3,273	
Soils												
Lost productivity	acres/decade	NA	3,568	3,283	3,150	3,072	3,143	2,260	2,141	985	3,071	Excludes roads.
Water Resources												
Sediment yield	tons x 100/ decade	NA	4,915	3,151	2,813	2,728	2,772	993	1,883	429	1,235	
Vegetation												
Acres denuded	acres/decade	3,553	5,568	5,124	4,932	4,800	3,696	3,528	3,306	1,662	4,764	
Road construction												
Plant habitat altered by	acres/decade	41,231	107,516	98,872	95,234	92,653	71,314	68,100	0	32,063	91,920	
Herbicide use	acres/decade	75,004	74,807	68,852	65,956	64,374	73,600	47,438	45,107	19,915	61,804	
Timber harvesting												
Wildlife Habitat												
Habitat modified	acres/decade	NA	125,000	116,200	111,600	109,900	89,600	82,300	85,700	21,600	107,000	Roads, harvest and thinning.
Early successional stage habitat, end 1st decade	acres	75,000	97,400	92,000	89,700	88,100	71,800	73,300	71,000	51,600	87,800	Habitat < 15 years old.
Early successional stage habitat, end 10th decade	acres	75,000	134,000	74,300	119,500	71,700	72,600	51,000	71,100	37,400	100,500	Habitat < 15 years old.
Old growth habitat, end 1st decade	acres	110,900	66,500	70,600	72,400	73,600	35,000	85,800	87,600	103,200	74,400	Habitat 196 years and older.
Old growth habitat, end 10th decade	acres	110,900	13,700	21,100	31,800	31,800	7,300	68,100	70,000	123,500	38,900	Habitat 196 years and older.
Wildlife Population												
Roosevelt Elk, end of 5th decade, Tye Area only	Percent change from existing	NA	-25%	-25%	-25%	-25%	-10%	-5%	-20%	No Change	-25%	Plus or minus 5 percent.
Roosevelt Elk, end of 10th decade, Tye Area only	Percent change from existing	NA	-25%	-25%	-30%	-20%	-20%	-5%	-20%	No Change	-20%	Plus or minus 5 percent.
N. Spotted Owl, end of 10th decade	Pairs	55	0	0	18	18	0	25	18	55	19	300 acre old growth management recommendation.
N. Spotted Owl, end of 10th decade	Pairs	55	0	0	0	0	0	24	0	42	0	1,000 acre old growth management recommendation.
Snag Dependent Wildlife	Percent of Potential	>60%	<10%	10%	20-30%	20-30%	<10%	40-50%	40-50%	70-80%	20-30%	Long term
Recreation												
Ability to meet needs		—	-L	+L	+L	+L	-M	+L	+L	+L	+L	
Cultural Resources												
Inadvertent degradation (undiscovered sites)		—	-H	-H	-M	-L	-L	-L	-L	-L	-L	Based on comparison of harvest levels.
Visual Resources												
Degradation of scenic quality		—	-H	-M	-M	-M	-H	-L	-L	0	-M	
Areas of Critical Environmental Concern												
Degradation of resource values		—	-M	0	0	0	-H	0	0	0	0	
Special Areas												
Site degradation		—	-H	-L	-L	-L	-H	-L	-L	-L	-L	
Energy Use												
Billion Btu's consumed annually		—	834	770	741	723	528	536	514	218	716	
Socioeconomic¹												
Impacts Compared to Existing Condition												
Total earnings	\$ millions	39.2	+21.2	+16.6	+14.3	+12.9	+2.8	-0.9	-2.4	-21.6	+12.4	
Total employment	jobs	3,225	+1,746	+1,367	+1,178	+1,058	+232	-77	-198	-1,780	+1,023	
Public revenue	\$ millions	14.2	-1.1	-2.1	-2.6	-2.9	-5.1	-5.9	-6.2	-10.4	-3.0	Based on stumpage at \$94/M bd. ft.
	\$ millions	14.2	+22.0	+19.3	+17.9	+17.0	+11.0	+8.7	+7.9	-3.7	+16.8	Based on stumpage at \$260/M bd. ft.
Impacts Compared to No Action Condition												
Total earnings	\$ millions	42.0	+18.4	+13.8	+11.5	+10.0	²	-3.8	-5.2	-24.5	+9.6	
Total employment	jobs	3,457	+1,514	+1,135	+946	+826	²	-310	-430	-2,012	+791	
Public revenue	\$ millions	15.2	-2.1	-3.1	-3.6	-3.9	²	-6.9	-7.2	-11.4	-4.0	Based on stumpage at \$94/Mbd. ft.
	\$ millions	15.2	+21.0	+18.3	+16.9	+16.0	²	+7.7	+6.9	-4.7	+15.8	Based on stumpage at \$260/M bd. ft.

¹ See Chapter 3 for discussion of dual impact measures.² Impacts measured from No Action Condition (Alternative 5).

+ Beneficial - Negative L Low M Medium H High

NA - Not Applicable

Daily administrative visits are not uncommon when harvest is moving at a fast pace, slash disposal is occurring, or road construction involving critical aspects (such as stream crossing structures) is taking place. Service contracts, i.e., tree planting, precommercial thinning, tubing, manual brush cutting and fertilization, are monitored at regular intervals to determine the quality and quantity of completed work. Visits to these operations range from twice a week to the full-time presence of a Bureau contract administrator, depending on the experience of the contractor and rate of progress. Daily visits usually occur when there is reason to believe that the operator will require help in the interpretation of contract requirements.

Silvicultural treatment success is monitored through a series of inventories and surveys performed at various times during the stand's life. Appropriate stocking surveys are performed both prior to and after a treatment is accomplished. Information from these surveys identifies the need for or success of a particular silvicultural treatment. This information is documented and maintained in the operations and reforestation records systems.

Water quality monitoring would be carried out in accordance with Executive Orders 11514 (partially amended by 11991) and 12088, Sections 208 and 313 of the Clean Water Act (PL 95-217, PL 92-500 as amended), BLM Manual 7240 and Oregon Department of Environmental Quality Memorandum of Understanding (MOU-OR 158). Standard analytical methods would be followed.

Monitoring systems for other resource management programs (wildlife habitat, visual, cultural and recreational) outlined in the final decision would be developed and implemented.

Requirements for Further Environmental Analysis

This environmental impact statement may best be described as a regional statement for the proposed 10-year timber management plan and is considered applicable for the decade. Site specific environmental analysis and documentation (including categorical exclusion where appropriate) will be accomplished for each type of treatment under consideration. Interdisciplinary impact analysis will be tiered within the framework of this and other applicable environmental impact statements.

An environmental assessment of a timber sale (or group of sales) will address the effects of the harvest method, yarding system, road construction or reconstruction, slash disposal and any other treatments conducted under the terms of a timber sale contract. Environmental analysis of forest development projects such as precommercial thinning, animal damage control, fertilization and herbicide applications will also be accomplished.

With problems and conflicts identified through analysis, it is possible to design the proposed project in an environmentally sensible manner. Where the action is to be accomplished by a contractor, the environmental assessment is a primary means for determining appropriate contract stipulations. Projects to be accomplished by BLM personnel are conducted in accordance with the findings of the analysis and decision documents.

If an environmental assessment indicates potential for significant impacts not already described in an existing EIS, an environmental impact statement or a supplement to an existing EIS may be required.

Interrelationships

Much of western Oregon is timber producing land. In addition to the BLM, jurisdictions include the U.S. Forest Service, State of Oregon, the counties, and private companies and individuals. Each entity approaches management of timber lands differently, although some periodically prepare internal or public plans for their management.

Federal Agencies

The Roseburg SYUs share in part a common boundary with the Umpqua National Forest. Coordination between the BLM District Manager and the Forest Supervisor is routine. Specific project and program coordination takes place as needed between all management levels of each agency and also between resource specialists. A cooperative agreement provides for interagency road construction and use and fire protection.

The U.S. Army Corps of Engineers has the authority, under Section 404 of the Clean Water Act of 1977 (P.L. 95-217), to regulate the discharge of dredged or fill materials into any estuary, wetland or streams of the United States with flow in excess of five cubic feet per second. Normal silvicultural practices are exempt from this regulation. Based on the adequacy of BLM environmental protection practices, the Corps has issued BLM a general permit for all such activities. Under the permit, BLM provides the Corps, the State Division of Lands and certain environmental review agencies with advance notice of specific proposed projects. Larger projects exceeding limits in the general permit require a separate permit.

The U.S. Fish and Wildlife Service administers the Endangered Species Act of 1973 (as amended). Accordingly, BLM consults with that agency when it is determined that a threatened or endangered species or its critical habitat may be affected. The purpose of consultation is to obtain expert advice on the appropriate course of action. The outcome of such consultation may mean modification or abandonment of the action.

The National Marine Fisheries Service (NMFS) is responsible for oversight and evaluation of activities which may affect marine, estuarine, and anadromous fishery resources. NMFS participates in comprehensive land and water use planning under the terms of the Water Resources Planning Act, the Coastal Zone Management Act, and the National Environmental Policy Act and makes recommendations for maintenance or enhancement of anadromous fishery resources under the terms of the Fish and Wildlife Coordination Act.

The Soil Conservation Service (SCS) is responsible for all aspects of the National Cooperative Soil Survey. Accordingly, BLM has a cooperative agreement with SCS that provides for the development and utilization of soil surveys on lands that are of interest to the Bureau. The soil survey data will provide a basis for efficient interpretations for the Bureau planning and management systems.

The National Park Service (NPS) administers the Nationwide Rivers Inventory, as provided under the National Wild and Scenic Rivers Act of 1968. Present efforts are directed toward inventory and evaluation to determine which free-flowing rivers and river segments are suitable for possible designation as components of the National Wild and Scenic Rivers System. BLM consultation with NPS is required if proposed management actions could alter a river's ability to meet established Wild and Scenic Rivers Act eligibility and/or classification criteria.

State and Local Governments

Section 202(c) of the Federal Land Policy and Management Act requires BLM to coordinate its planning efforts with those of State and local governments; assist in resolving inconsistencies in our mutual planning efforts; provide for State and local governmental involvement in development of BLM land use programs, regulations and land use decisions; and develop BLM resource management plans and programs consistent with those of State and local government to the extent that such BLM plans and programs are also consistent with Federal law and regulations. BLM coordination efforts involve a number of State and local administrative and planning agencies as highlighted below.

The Intergovernmental Relations Division for the State of Oregon is the clearinghouse for the various State agencies. Notice of all BLM planning and major proposed actions are provided for coordinated State level review by the State Clearinghouse. The Regional Councils of Government serve as the clearinghouse for coordinated review of proposed BLM activities by county and local governments in their respective areas of interest. BLM involvement with the three counties in the SYUs is largely via the boards of

county commissioners. Through these bodies, county governments participate in planning for land use, road construction and recreational developments on public lands administered by BLM.

The Oregon Land Conservation and Development Commission (LCDC) administers the state comprehensive land use planning program as provided in Oregon State Statutes, Chapter 197 (ORS 197). In this program, county and local governments are required to develop comprehensive land use plans and implementing ordinances consistent with 14 statewide planning goals and guidelines. These call for a balance between conservation and development to best meet public needs.

Close relations have been established with LCDC to ensure cooperation and coordination of BLM programs and planning efforts with those conducted by county and local governments under ORS 197. The relationship of the Roseburg alternatives to the LCDC Statewide Goals is shown on Table 1-6. Discussion comments on this table generally focus attention on deficiencies in addressing the listed goals.

Throughout the planning process, BLM has worked with Douglas County to achieve consistency with local plans. Methods of involving local governments have included: (1) frequent informal contacts to discuss local planning concerns; (2) invitations to participate in public tours, workshops and meetings; and (3) discussions with the Douglas County Planning Department to determine consistency of BLM's preferred land use plan with acknowledged local plans.

The Comprehensive Land Use Plan for Douglas County was adopted by the Douglas County Board of Commissioners in 1981 and was recently accepted by LCDC. To meet the decision factor regarding consistency with State and local land use plans, the Original Proposed Action and New Preferred Alternative were developed to be consistent with the recently adopted Comprehensive Land Use Plan of Douglas County.

Table 1-6 Relationship of Roseburg EIS Alternatives to LCDC Statewide Goals¹**LCDC Statewide Goal
Number and Description****Discussion²**

1. To insure citizen involvement in all phases of the planning process.	BLM land use planning process provides for public input at every stage — from assistance in the initial inventory to the identification of management opportunities, the development of alternatives, the environmental analysis and the final decision.
2. To establish a land use process and policy framework as a basis for all decisions and actions.	All alternatives have been developed in accordance with the land use planning process authorized by the Federal Land Policy and Management Act of 1976 which provides a policy framework for all decisions and actions.
4. To conserve forest lands for forest uses.	The planning area is predominately forest land. All alternatives provide retention of inventoried forest lands for forest users. No alternative exceeds the productive capacity of the land base and all proposed uses are compatible with forest uses.
5. To conserve open space and protect natural and scenic resources.	All alternatives conserve open space and protect mineral and cultural resources and T&E species. All alternatives except 1 protect scenic resources, wildlife habitat, natural areas and riparian areas to some degree.
6. To maintain and improve the quality of the air, water and land resources.	Only Alternative 1 does not fully address necessary enhancement of land and water quality for multiple use of forest lands or for meeting Federal and State minimum water quality standards. Slash burning will increase smoke (see Table 3-1). All alternatives would comply with the statewide smoke management plan.
7. To protect life and property from natural disasters and hazards.	All alternatives include identification of potential hazard areas and general BLM program and operational measures for protection of life and property from natural disasters and hazards.
8. To satisfy the recreational needs of the citizens of the State and visitors.	Alternative 1 emphasizes those activities having minimal impact on the commercial timber base. Alternatives 2, 3, 4, 7 and 9 provide a variety of developed and dispersed recreation opportunities to meet most recreational needs. Alternatives 6 and 8 provide for dispersed activities, natural areas and developed sites in some areas. Alternative 5 would continue the existing situation. Alternatives 1 and 5 would fail to adequately meet some increasing needs for areas and facilities.
9. To diversify and improve the economy of the State.	Alternatives 1 and 2 would increase timber production, but lack diversity in that limited allocations would be provided for non-timber values. Alternatives 3, 4 and 9 provide diversity and increase total economic returns. Alternative 5 maintains status quo while Alternatives 6, 7 and 8 provide diversity but result in decreases in total economic returns.
12. To provide and encourage a safe, convenient and economic transportation system.	The forest transportation system will be expanded and improved.
13. To conserve energy	Conservation and efficient use of energy resources are objectives in all BLM activities.

¹ LCDC goals not generally applicable to the proposal and alternatives are: 3. Agricultural lands; 10. Housing; 11. Public Facilities and Services; 14. Urbanization; 15. Willamette Greenway; All Coastal Zone Goals.

² See Chapter 3 and Table 1-5 for impacts of the alternatives on the various resources. Also see the Index and Table of Contents for specific page numbers to specific resources.

The Oregon State Forester, by means of the Forest Practices Act of 1972, regulates timber harvest methods and supportive practices on all non-federal lands within the SYUs. Minimum standards are prescribed relating to the following forest practices:

- Timber harvesting.
- Reforestation of economically suitable lands.
- Road construction and maintenance on forest land.
- Chemical applications.
- Slash disposal.
- Maintenance of streamside buffers.

Although Federal agencies are not bound by State forest practice rules, Bureau minimum standards meet or exceed State rules. The BLM and USFS, acting jointly, have entered into a Memorandum of Understanding (MOU) with the State Forester in this regard.

BLM is a cooperator in the Statewide Smoke Management Plan administered by the Oregon State Forester in order to comply with the Clean Air Act of 1963 (as amended). The primary objective of the plan is to keep smoke from slash disposal operations away from population centers. Slash burning is allowed to begin only when smoke dispersion conditions are determined by

Oregon State Department of Forestry (OSDF) to be favorable.

OSDF is the primary contractor for fire protection of public lands administered by BLM in the SYUs. That department undertakes presuppression and suppression actions for all lands in the area.

The Forestry Program for Oregon (Oregon State Board of Forestry 1977) outlines basic objectives of the Oregon State Board of Forestry for timber land management within the State. The relationship of the nine alternatives to these basic objectives is shown in Table 1-7. For the decade beginning in 1980, BLM harvest projections to meet Forestry Program for Oregon targets is 245.4 MM bd. ft. annually.

Management of wildlife, including fish, within the SYUs is the responsibility of the Oregon Department of Fish and Wildlife. The Sikes Act (PL 93-452) as amended is the primary tool guiding coordination between BLM and ODFW. BLM, in managing lands under its jurisdiction, considers wildlife habitat as a resource category. A master Memorandum of Understanding with supplemental cooperative agreements describes the mutual responsibilities of the two agencies. Oregon Revised Statute 496.012 established goals for the management of the State's wildlife. The

Table 1-7 Consistency of the Roseburg Alternatives with the Basic Objectives of the Forestry Program for Oregon¹

Basic Objective	ALTERNATIVES			Discussion
	Consistent	Minimally Consistent	Inconsistent	
To maintain the maximum potential commercial forest land base consistent with other resource uses while assuring environmental quality.	1	5	2,3,4,6,7,8,9	The benchmark (391,070 acres) for consistency is the commercial forest land base minus withdrawn TPCC lands. Environmental quality would be protected to the degree specified in the Oregon Forest Practices Act. However, Alternative 1 would not meet management guidelines for certain lands as mandated by Congressional Acts and Federal Executive Orders (see Purpose and Need Section) because of impacts on riparian zones.
To maintain or increase the allowable annual harvest level to its fullest potential to offset potential socio-economic impacts.	1,2,3,4,5,9		6,7,8	The benchmark for consistency is the current allowable cut volume of 201 MM bd. ft. per year. The level of cutting the land base can sustain is dependent on number of acres allocated to timber production, level of management the land base receives and productivity of the land.
To identify and implement the levels of intensive forest management required to achieve maximum growth and harvest.	1,2,3,4,6,9	5	7,8	BLM currently implements a full range of intensive timber management practices (refer to Forest Management Treatments and Design Elements, this chapter) for optimization of timber production. New and improved practices would be implemented consistent with technological advances.
To maintain community stability by remaining flexible for increases in future harvest levels that would offset projected shortages.	1,2,3,4,9		5,6,7,8	The benchmark for consistency is the Roseburg District cooperative harvest target of 245 MM bd. ft./Yr. ² as determined by OSDF.

¹ Arrived at through consultation with Oregon State Department of Forestry.

² Oregon State Forestry Department, 1980.

consistency of the EIS alternatives with these goals is shown in Table 1-8.

The Oregon Department of Environmental Quality (ODEQ) has lead responsibility for statewide water quality management planning in accordance with Section 208 of P.L. 92-500 (Federal Water Pollution Control Act) as amended by P.L. 95-217 (Clean Water Act). BLM and ODEQ have entered into a Memorandum of Understanding which outlines their respective roles in meeting State water quality objectives. The MOU assures close interagency cooperation, development and implementation of appropriate practices and control measures to comply with the Clean Water Act, and compliance with State requirements. BLM forest management practices meet or exceed objectives of the statewide water quality management plan.

The cities of Canyonville, Drain and Riddle have signed Memoranda of Understanding with the BLM Roseburg District. These MOUs identify lands within municipal watershed boundaries and describe practices to be incorporated during timber management activities to maintain water quality. There are additional MOUs with a variety of agencies addressing resources within the Roseburg District.

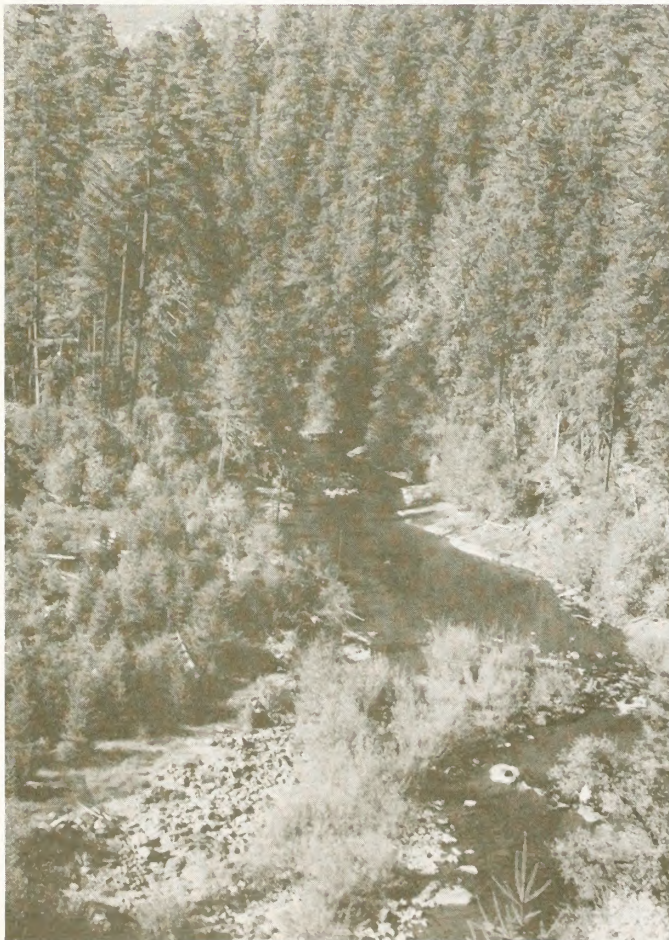
Table 1-8 Consistency of the Alternatives with State of Oregon Wildlife Goals

Goal	Consistent	Minimally Consistent	Inconsistent	Discussion
To maintain all species of wildlife at optimum levels and prevent the serious depletion of any indigenous species.	1 - 9 ¹ 8 ²	- 6	- 1 - 5, 7 and 9	In the short term all alternatives would provide habitat sufficient to retain a representative ecosystem and "prevent the serious depletion of any indigenous species". Only Alternative 8 would fully provide optimum long-term levels, although Alternative 6 would provide habitat at minimum viable levels for all species in the long term.
To develop and manage the lands and waters of the State in a manner that will enhance the production and public enjoyment of wildlife.	1 - 9 ¹ 6, 8 ²	- 2, 3, 4, 7 and 9	- 1 and 5	In the short term habitat diversity would increase such that production and public enjoyment of wildlife would be enhanced by all alternatives. In the long term Alternatives 6 and 8 would provide for all species, while Alternatives 2, 3, 4, 7 and 9 provide for enhancement and enjoyment of wildlife, but not for all species and at levels below optimum. Alternatives 1 and 5 would only enhance early seral stage species in the long term.
To develop and maintain public access to the lands and waters of the State and the wildlife resources thereon.	1 - 9 ^{1,2}	-	-	All alternatives provide for public access through an extensive road network over both the short and long term.

¹ Short-term (First decade)

² Long-term (Beyond first decade)

Chapter 2 Affected Environment



This chapter addresses the environment as it exists today within the Roseburg Sustained Yield Units (SYUs). In the SYUs there are approximately 424,000 acres of BLM managed lands, of which 404,000 acres are forested. On approximately 169,000 acres (40 percent), timber harvest has occurred for several decades, and the environment described exhibits the effects of human use. On about 255,000 acres (60 percent), there has been no past timber management, although interspersed non-public lands have been managed for timber. Within this area there are approximately 111,000 acres of 200-year-plus old growth on scattered tracts of public land.

Chapter 2 provides a basis on which impacts of all the alternatives may be assessed. Data and analysis will be commensurate with the importance of the impact, with less important material summarized, consolidated or simply referenced.

In preparation of this chapter, the primary data sources are documents of the Bureau planning system developed by the Roseburg District. The Unit Resource Analysis (URA), Planning Area Analysis (PAA) and proposed Management Framework Plan (MFP) for the Roseburg area are available for review at the Roseburg District Office of BLM in Roseburg, Oregon.

Other references supplementary to or updating planning system data are cited within the body of the text by author and date of publication. A listing of these references appears in the References Cited.

Climate and Air Quality

The area has a temperate marine climate with warm summers and mild, wet winters. In Roseburg, the mean maximum temperature is 84° F, the mean minimum is 33° F. The record high was 109° F in 1946 and the record low was -6° in 1888. During summer days, soil temperatures have been found to exceed 160° F. Monthly precipitation, mostly as rain, ranges from 5.46 inches in Riddle and 8.89 inches in Reston during January to less than 0.3 inches during July. Average precipitation is about 45 inches annually in the Roseburg SYUs. The maximum recorded was 60 inches at Twelvemile Creek. Snow may block roads in some winters, but snow is generally short-lived.

Air movement patterns are predominately from the north (U.S. Department of Commerce, Weather Bureau, Cited in USDI, BLM 1980a), except during the late fall and early winter months (November, December, January), when winds are southerly. Mean yearly wind speeds in Roseburg are 4.5 miles per hour.

During the late summer and fall months, the valleys and interior hills of Douglas County are subject to frequent night-time inversions--cool air stabilizing below warmer air above. Specific information on the extent and duration of these conditions within the area is not available.

Under the Clean Air Act Amendments of 1970, Oregon has been divided into five Federal Air Quality Control Regions (AQCRs) on the basis of pollution concentrations, geography and economics. The EIS area is in the southwest Oregon AQCR. Air quality in this area is good and meets all air quality standards (ODEQ 1981).

Provisions of the Clean Air Act Amendments of 1977 were made to ensure that areas with clean air do not suffer deteriorating air quality. Mandatory Class I areas are Crater Lake National Park and Diamond Peak, Kalmiopsis, Mt. Washington, Three Sisters, and Mt. Jefferson Wilderness areas. The SYUs and surrounding areas are designated Class II, which allows only moderate deterioration of air quality.

The only sampling site within the EIS area is located in Roseburg. Since 1971, total suspended particulate levels have exceeded secondary Federal health standards (more than 150 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$)) 14 times and have once violated primary standards (more than 260 $\mu\text{g}/\text{m}^3$) (ODEQ 1981). The annual geometric mean for total suspended particulates has ranged from 64.7 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) in 1974 to 46.0 $\mu\text{g}/\text{m}^3$ in 1980 (ODEQ 1981). See Table 2-1.

Occasionally, smoke from slash burning in the SYUs has been visible in the population centers of Roseburg and Eugene-Springfield (ODEQ 1981). Slash smoke problems (visible smoke) in Douglas County are shown in Table 2-2.

Table 2-1 Total Suspended Particulates in Roseburg
(micrograms per cubic meter, $\mu\text{g}/\text{m}^3$)

Year	No. of Samples	Days Exceeding Standards		Annual Geometric Mean	24 Hour Averages	
		150	260 ¹		Maximum	2nd Highest
1971	98	2	0	51.2	185	180
1972	88	2	0	59.3	222	162
1973	58	4	0	52.9	233	181
1974	57	4	1	64.7	263	258
1975	52	0	0	43.9	93	89
1976	51	0	0	47.8	140	121
1977	60	1	0	52.0	170	170
1978	60	0	0	51.4	104	103
1979	32	0	0	-	109	92
1980	60	1	0	46.0	157	137

¹Secondary standard = $\geq 150 \mu\text{g}/\text{m}^3$; primary standard = $\geq 260 \mu\text{g}/\text{m}^3$.

Table 2-2 Slash Smoke Problems in Douglas County

Year	No. of Burns	Acres	Tons of Slash	Number of Problems		
				Total	BLM	Days
1976	630	24,986	686,523	14	1	1
1977	601	21,542	888,965	4	0	0
1978	641	25,617	1,042,245	9	5	3
1979	603	24,103	909,172	0	0	0
1980	690	26,507	756,713	29	12	1
1981	141	3,742	51,457	0	0	0

Source: ODEQ 1981; OSDF Annual Reports of Oregon Smoke Management Plans, 1977 through 1982.

Geology and Topography

The SYUs are located within the Coast Range, the Klamath Mountain and the Western Cascades physiographic provinces (Figure 2-1). The Coast Range is made up of submarine basalts and marine sediments of the Tye and Umpqua Formations. The Klamath Mountain province is geologically complex, consisting of marine sediments, plutonic and volcanic rocks that have been folded, faulted and metamorphosed. The topography is rugged due to the resistant type of rock found there. Serpentine is fairly widespread in the Klamath Mountains, and extends northeasterly from the Cow Creek area through the central and southern part of the SYUs. Granite and diorite bedrock are found in several large areas in the southeastern part of the SYUs. These erode easily, creating steep, short sideslopes and sharp ridges.

Also found in the Klamath Mountain province are thickly bedded sandstone and thin interbeds of mudstone, volcanic rock sometimes called greenstone because of the abundance of chlorite, and a chert pebble conglomerate overlain by sandstone, siltstone and conglomerate. The Western Cascade Province is characterized by a rugged topography with irregular ridges and deep narrow valleys. The rocks are mostly volcanics. Intrusive rock bodies in the Western Cascades are generally small and consist of plugs, dikes, sills and domes.

Throughout the SYUs, slopes range from 0 percent to vertical and average about 60 percent. Over 40 percent of the area has slopes in excess of 65 percent. Elevations range from 150 feet at Elkton, 500 feet at Roseburg and 650 feet at Myrtle Creek to 2,800 feet at Baughman Lookout, 3,900 feet at Dutchman Butte, 4,400 feet at Deadman Mountain and 4,800 feet at Huckleberry Mountain.

Soils

The "Soils of the Roseburg District" (Wert et al. 1977) describes the soils resource of the EIS area in detail. A generalized soils map, which

contains 14 broad groupings of soils, is shown as Figure 2-2. This map is useful only to show a general view of the major soils in the Roseburg SYUs. Soil moisture and soil temperature directly influence the ability of the soil to support plant life.

Soils within the SYUs are generally capable of producing abundant plant growth. Most soils have a high content of organic matter, moderate to high nutrient levels and medium bulk densities (1.1 to 1.3 gm/cm³). Soils at high elevations, however, are often low in organic matter and nitrogen.

Dry ravelling of soil materials, landslides and soil surface erosion occur naturally throughout the Roseburg SYUs. Total soil loss from these factors in the undisturbed forests is estimated to be 0.15 to 0.40 tons per acre per year (t/ac/yr). Soil loss and loss of soil productivity have accelerated as a result of timber harvesting and road building. District experience has shown that in areas where road construction and harvests have taken place and regrowth is now established, soil loss is about 1 to 3 t/ac/yr. In typical areas where tractor logging and downhill yarding have been practiced, erosion is estimated to be 230 t/ac/yr initially, reducing to an estimated 5 to 10 t/ac/yr after three to five years, finally stabilizing at an estimated 1 to 3 t/ac/yr in about two decades. During the past decade soil productivity has been reduced on 9,279 acres of BLM-administered land (5,276 acres by harvest and yarding methods that compact the soil and 3,553 acres bared by road construction activities). Table 2-3 shows totals within the Roseburg District.

Fragile soils are found throughout the Roseburg SYUs. These soils include 33,547 acres of granitic soils or other soils that have a high potential for mass-failure and 138,711 acres of soils on very steep slopes with inclusion of unstable headwalls. These acres and the percentages of the BLM area are shown in Table 2-4.

Mass movements tend to occur in draws where the slopes are steep and the soils are extremely fragile. Fragile soils are mostly shallow (less than 20 inches to bedrock), have greater than 35

percent by volume of coarse fragments (rock and gravel), occur on slopes of 60 to 80 percent or greater and have low water-holding capacity and moderately rapid permeability.

The two major kinds of mass movement of soils in the Roseburg SYUs are slumps and debris avalanches. Slumps are one or more blocks of soil that have rotated out of a hillside along a bowl-shaped failure plane. Debris avalanches are the rapid movement of incoherent soil, rocks and forest debris down steep draws. Soils that are associated with debris avalanches are usually those loamy and/or gravelly soils formed over decomposing granitic bedrock, sandstone, hard tuffs or breccias on 70 percent or greater slopes. Debris avalanches occur on the following soils in the SYUs: Holland and Siskiyou (slopes over 70 percent); Digger, Jason and Umpcoos (over 75 percent slopes); Larmine, Atring, Kilchis, Harrington, Chamate and Shippa soils (slopes over 80 percent).

Table 2-3 Bared Soils and Road Surfaces

Failing cut-and-fill slopes and soil mass-movements	700 acres
Unsurfaced roads causing erosion	600 acres
Road surface	12,000 acres
Totals	13,300 acres

Footnote:
Estimates based on district soil scientist field experience and observations.

Water Resources

The SYUs lie within four major river basins. There are 188,440 acres of BLM-administered land drained via the South Umpqua River, 65,100 acres drained via the North Umpqua River, another 154,900 acres are drained by the main stem of the Umpqua River and 14,560 acres are drained by the Middle Fork Coquille River. Within these large watersheds, smaller sub-watersheds have problems with debris, sedimentation, bank erosion and elevated temperatures. The rivers and creeks with severe problems are shown in Table 2-5. Water quality problems in the SYUs are non-point source pollution resulting from debris, sedimentation, bank erosion and elevated temperatures. High sediment loads and streambank erosion occur during periods of peak flow (winter and spring), while problems of elevated temperatures, low dissolved oxygen and nuisance algae occur during periods of low flow (summer). Streamflow data collected at gauging stations within or nearby the SYUs are given in Table 2-6, Streamflow Data.

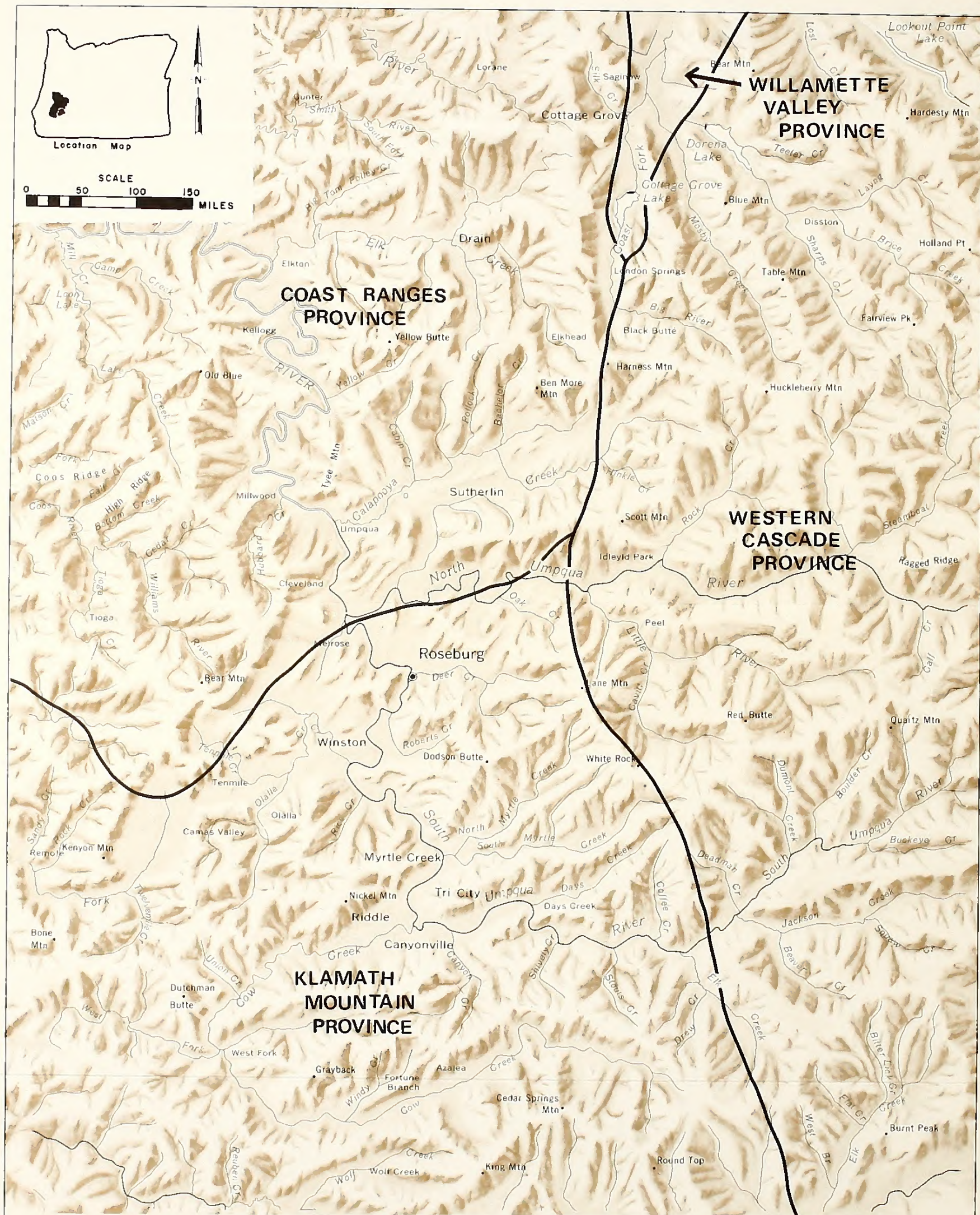
Table 2-7 shows water and sediment discharge measured at selected gauging stations throughout the SYUs. The sediment yield ranges from 0.4 tons per acre at Olalla Creek near Tenmile to 3.0 tons per acre at the mouth of Lookingglass Creek. These values represent a long-term average and may differ greatly from year to year. Peak yields occur during the period of high runoff.

Sediment losses from the SYUs depend on the changing combination of many watershed variables. Within the SYUs, which are mostly forested, a small portion of the sediment produced is attributable to purely natural forces. This loss represents the geologic rate of erosion.

Table 2-4 Fragile and Problem Soils

Problem	Figure 2-2 Color	Acres	Percent of SYUs
Soils on very steep slopes with inclusion of unstable headwalls.	Blue	138,711	33
Soils on very steep slopes with inclusion of unstable headwalls and a high potential for failure when trees are removed.	Green	4,639	1
Granitic soils with severe surface erosion and inclusion of unstable headwalls.	Yellow	24,481	6
Granitic soils on very steep slopes with inclusion of unstable headwall and a high potential for failure when trees are removed.	Green	4,426	1

Footnote:
Due to map scale (Fig. 2-2) it is not possible to delineate individual fragile sites.



U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
ROSEBURG DISTRICT

DOUGLAS AND SOUTH UMPQUA SUSTAINED YIELD UNITS

Roseburg Environmental Impact Statement Area
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FIGURE 2-1

PHYSIOGRAPHIC PROVINCES

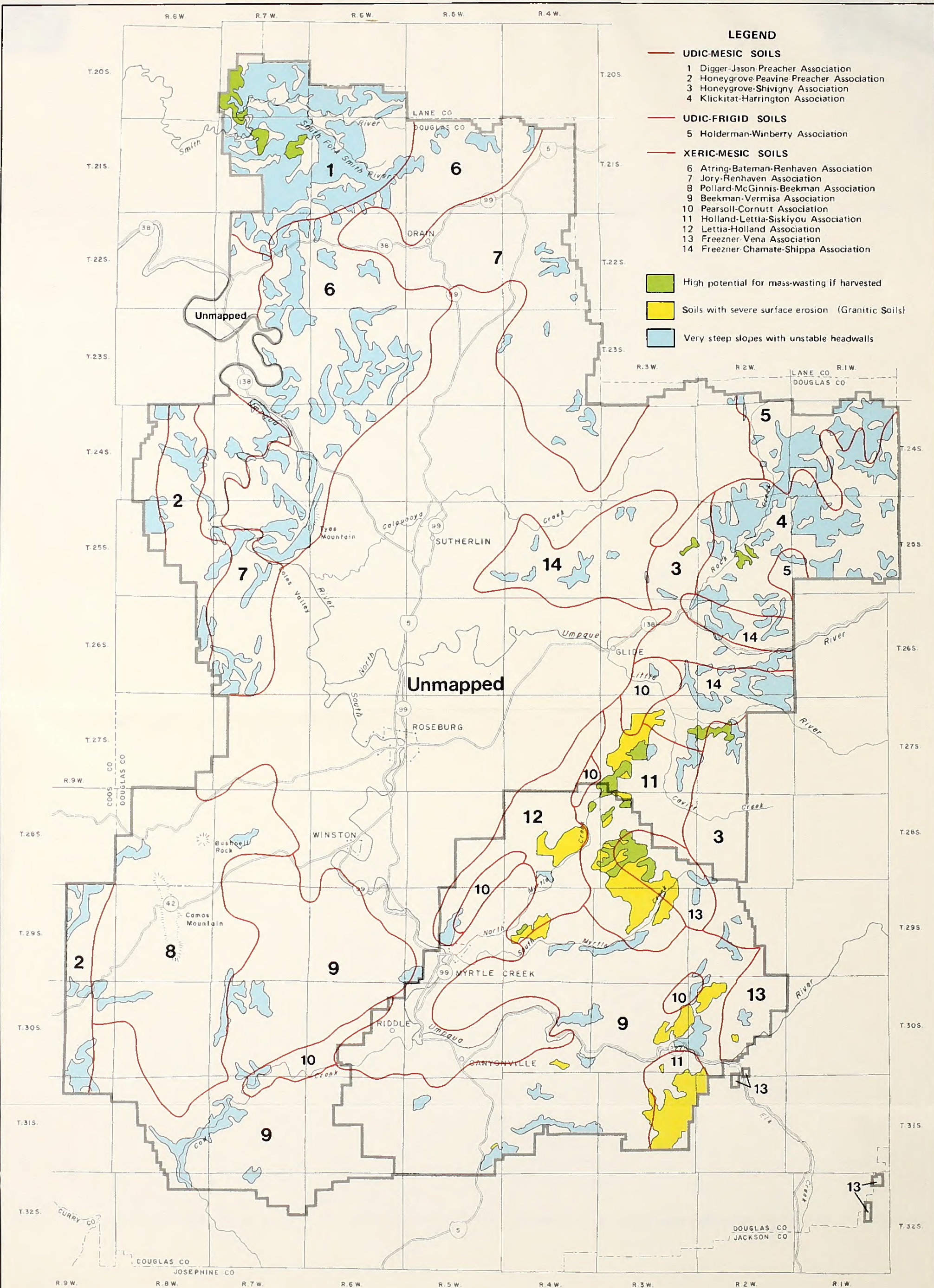
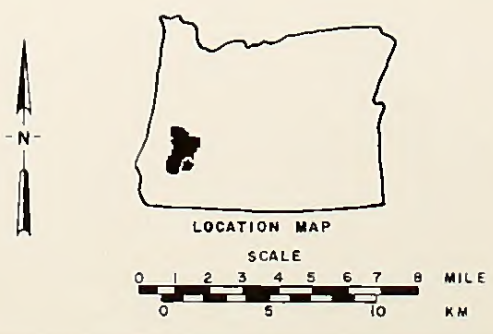


FIGURE 2-2
GENERAL SOILS



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ROSEBURG DISTRICT

**DOUGLAS AND SOUTH UMPQUA
SUSTAINED YIELD UNITS**

Roseburg Environmental Impact Statement Area
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Table 2-5 Severe Water Quality Problems

	Severe Sedimen- tation	Streambank Erosion	Elevated Water Temper- atures	Water Withdrawals Causing Quality Problems
Cow Creek	X		X	X
North Myrtle Creek	X	X	X	X
South Myrtle Creek	X	X	X	X
South Umpqua River	X	X	X	X
Twelvemile Creek	X			
Elk Creek	X		X	X
Smith River (Headwater)	X	X	X	
Tenmile Creek	X		X	X
Lookingglass Creek	X		X	X
Olalla	X		X	X
Middle Fork Coquille River			X	X
Sutherlin Creek			X	X
Rock Creek	X	X	X	
Canton Creek		X	X	
Canyon Creek	X		X	X
Days Creek	X		X	X
Little River			X	X

Source: ODEQ Aug. 1978

Groundwater supplies are highly variable and limited. Most wells produce only enough water to supply single households, and some may go dry during the summer. In the Drain-Yoncalla area, water supply is very poor. In the Willis and Rice Creek Drainages, groundwater supply is almost non-existent. Cow Creek has one of the better groundwater supplies in the county. Winston, Dillard, Tenmile, Elkton and Olalla have fair supplies.

Heavy irrigation withdrawals are taken from Elk Creek, Calapooya Creek and the Umpqua River and throughout the South Umpqua River system. Bear Creek and Adams Creek watersheds, located near Drain and Yoncalla, are used as sources for domestic water supply by these two communities. In addition, several communities withdraw water for domestic use. The Roberts Creek Water District has rights on the South Umpqua River, the South Umpqua Water Association has rights on Cow Creek and serves 40 percent of Canyonville and the area between Riddle and Canyonville. The remainder of Canyonville uses O'Shea Creek and West Fork of Canyon Creek. Myrtle Creek uses the South Umpqua River as a backup source, and the Tri-City Water Association has rights on the South Umpqua. Riddle uses Judd, Cow and Russell Creek watersheds for municipal water supplies.

Vegetation

The SYUs are located in the Northwest Coastal Coniferous Sub-biome, which is the most densely forested region in the Coniferous Biome. Characterized by easy regeneration and rapid growth, it produces trees of impressive sizes. The lower vegetative layers are usually poorly developed except where open canopies encourage a lush understory of grasses, shrubs and herbaceous species. Additional information may be found in the BLM Timber Management FEIS.

Terrestrial Vegetation

For purposes of this EIS, vegetation is generally described in terms of "zones" adapted from those identified by Franklin and Dyrness in *Natural Vegetation of Oregon and Washington* (1973). A detailed description of each zone and plant community listed below may be found in that source or from data prepared in the Roseburg District. A complete list of common and scientific names for all plants discussed is available upon request.

Portions of three major vegetative zones, Mixed Conifer, Western Hemlock and Interior Valley, are found within the SYUs.

The southern portion of the SYUs above 1,000 feet in elevation is generally occupied by the Mixed Conifer Zone. Approximately 50 percent of BLM-administered lands in the SYUs lie within one of the following three major plant communities.

Table 2-6 Streamflow Data

Location	Average Discharge/Yr		Peak Discharge		Minimum Discharge	
	(CFS)	(Ac. Ft.)	(CFS)	(Date)	(CFS)	(Date)
Cow Creek (Riddle)	898	650,600	41,100	Oct. 1950	7.4	Aug. 1977
Olalla Creek (Tenmile)	94.2	68,200	12,300	Dec. 1955	0	several yrs.
Tenmile Cr. (Tenmile)	64.4	46,700	3,650	Jan. 1971	0	several yrs.
Lookingglass Cr. (Brockway)	287	207,900	35,000	Dec. 1955	0	several yrs.
Steamboat Cr. (below Canton Cr.)	741	536,900	51,000	Dec. 1964	30	Sept. 1973
Rock Cr. (above fish hatchery)	373	270,200	22,800	Dec. 1964	14	Sept. 1966
Little River (Peel)	475	344,100	22,700	Nov. 1953	14	several yrs.
N. Umpqua R. (Winchester)	3,746	2,714,000	150,000	Dec. 1964	383	Sept. 1960
Calapooya Cr. (Oakland)	485	351,300	26,600	Nov. 1961	0	1966, 1974
Umpqua River (Elkton)	7,504	5,437,000	265,000	Dec. 1964	640	July 1926
Elk Creek (Drain)	227	164,400	15,000	Feb. 1961	0	several yrs.
Smith River (Gardiner)	976	547,700	26,000	Feb. 1961	4.3	Aug. 1966
S. Umpqua R. (Tiller)	1,042	754,900	60,200	Dec. 1964	20	Sept. 1911
Elk Creek (Drew)	85.6	62,020	8,880	Dec. 1964	0	1974, 1977
Days Creek (Days Creek)	44.4	32,170	3,450	Feb. 1956	0	JI/Ag 1961
S. Myrtle Cr. (Myrtle Cr.)	65.9	57,740	3,050	Dec. 1956	0.2	Aug. 1961
N. Myrtle Cr. (Myrtle Cr.)	74.2	53,760	3,260	Jan. 1964	0	1973, 1977
S. Umpqua R. (Brockway)	2,899	2,100,000	125,000	Dec. 1964	16	Aug. 1977

Source: USDI, BLM Roseburg District URA 1980a (as of 1978 water year)

Table 2-7 Sediment Discharge Data

Location	Mean Annual Suspended Sediment Discharge			Maximum Observed	
	Discharge (Tons/Year)	Concentration (Mg/L)	Yield (Tons/Ac)	Concentration (Mg/L)	Discharge (Tons/Day)
Steamboat Cr. (below Canton Cr.)	210,000	240	1.2	3,870	106,000
N.Umpqua R. (Winchester)	800,000	120	1.0	768	71,200
Umpqua River (Elkton)	3,500,000	370	1.5	927	196,000
Elk Creek (Drain)	74,000	230	1.1	2,930	9,730
Olalla Creek (Tenmile)	16,000	150	0.4	3,600	3,040
Lookingglass Cr. (Brockway)	310,000	890	3.0	2,600	35,100
S. Umpqua R. (Brockway)	1,700,000	500	1.6	1,800	208,000
S. Umpqua R. (Tiller)	140,000	120	0.5	1,260	65,100
Cow Creek (Riddle)	370,000	370	1.3	1,360	64,600

Source: USDI, BLM 1980a.

- a. White fir, western hemlock, vine maple, western yew
- b. White fir, Douglas-fir, whippie vine
- c. Douglas-fir, incense cedar, pine-mat manzanita.

Frequent associates to these plant communities which are also important to the forest industry include sugar pine, ponderosa pine, western redcedar and western white pine.

The Western Hemlock Zone extending throughout the northern portion of the SYUs at all elevations, covers approximately 47 percent of BLM-administered lands in the EIS area. It is famous for its subclimax species, Douglas-fir, which is often the sole dominant tree in the forest. As a pioneer species, Douglas-fir normally constitutes a seral (successional) stage during the vegetative community development process. This zone encompasses six major plant communities with various associations of trees, shrubs and forbs relative to specific climatic conditions such as aspect, moisture, soil type and depth, etc. These communities are listed on a site moisture gradient from dry to wet:

- a. Douglas-fir, ocean spray
- b. Western hemlock, golden chinkapin
- c. Western hemlock, Pacific rhododendron, salal
- d. Western hemlock, Pacific rhododendron, Oregon grape
- e. Western hemlock, swordfern, Oregon oxalis
- f. Western redcedar, western maidenhair fern, ladyfern

The Interior Valley Zone includes the lowlands and valley bottoms enclosed by the Cascade and Coast Ranges. Approximately 3 percent of BLM-administered lands occur within this zone at elevations up to 1,300 feet. Plant communities vary from grasslands and oak-madrone woodlands in low areas to conifer forests on the slopes. Frequent associates to these plant communities are Douglas-fir, ponderosa pine, incense cedar, ocean spray, Oregon grape and rye grasses.

Riparian habitat occupies the transitional terrestrial areas from the water's edge to the better-drained slopes. Vegetation in these areas ranges from a few aquatic species and the hardwood-western redcedar-hemlock type, to the predominant Douglas-fir stand usually found on the slopes.

Habitat stratification for all forested land of the entire Roseburg Area is depicted in Table 2-8. The entire Roseburg Area includes all lands in Douglas County east of the crest of the coast range. Acreages listed are a composite of all ownerships obtained from several sources (USFS; OSDF; OSDT) as well as the BLM forest inventory. The acreages of BLM-administered lands are shown for comparison.

Table 2-8 Existing Forest Habitat Stratification of Entire Roseburg Area (Acres)

Habitat Age	BLM	All Lands
Grass/Forb (non-stocked and 0-7 years)	34,100	213,900
Brush/Seedling (8-15 years)	40,900	239,100
Pole/Sapling (16-45 years)	56,400	356,800
Young 2nd Growth (46-115 years)	82,200	258,900
Mature (116-195 years)	79,800	121,500
Old Growth (196+ years)	110,900	234,100

Source: USDI, BLM; USDA, FS; Oregon State Department of Forestry; Oregon State Department of Transportation (Parks and Recreation Branch)

The old-growth forests existing today are complex ecosystems which have evolved by natural selection through successional stages during the vegetative community development process. Evidence now points to the simultaneous evolution of mycorrhizal tree hosts, hypogeous fungi, and small mammals that function as a transport mechanism for the fungi.

Research required to fully understand the relationships and importance of these processes to long-range timber production has not yet been completed. It now appears that dispersal of mycorrhizal fungi by small mammals may be a critical factor in forest plantation establishment and survival in some instances (Maser et al. 1978). The functioning of the old growth forest as a system, however, has not yet been studied in depth. As recently as 10 years ago, nothing was known about sources of nitrogen in old growth stands. It is now known that lichens which inhabit the canopy of live old growth trees fix significant amounts of nitrogen which ultimately become

available to the whole forest through leaching, litter fall and decomposition. Also, lichens and wood-dwelling bacteria on standing dead trees and logs have recently been identified as significant sites of nitrogen fixation (Franklin et al. 1981).

Seed zones are accepted as generally encompassing a geographic area within which the factors affecting reforestation and subsequent growth are relatively homogeneous (Appendix A). Seed zones and elevational intervals involving BLM-administered lands in the Roseburg SYUs are shown in Table A-1.

Wetland and Aquatic Vegetation

Wetlands are those areas inundated by surface or ground water at a frequency sufficient to produce a saturated or seasonally saturated soil condition. Examples of wetlands include marshes, swamps, bogs, wet meadows and natural ponds. Sedges, grasses, rushes, skunk cabbage, cattails and algae are typical wetland and aquatic plants.

Sensitive, Threatened and Endangered Plants

Endangered plants are those species that are in danger of extinction throughout all or a significant portion of their range. Threatened plant species are those that presently are not endangered but are likely to become so within the foreseeable future throughout all or a significant portion of their range. Sensitive plants are those species not yet officially listed but undergoing a status review (see Glossary-Sensitive Species).

Botanical surveys for sensitive, threatened and endangered plants were conducted on the Roseburg District from 1978 through 1980 and are continuing. At present, one federally listed endangered plant (*Arabis macdonaldiana*, McDonald's arabis) is suspected to occur in the EIS area, but as yet remains unobserved. Several species observed in the EIS area are currently under review for listing as threatened or endangered by the U.S. Fish and Wildlife Service (Table 2-9). The final status of these species will be determined as sufficient data are collected.

Table 2-9 Sensitive Species Currently Under Review For Possible Listing

Scientific Name	Common Name	Candidate for ¹	Observations ²
<i>Arabis koehleri</i> var. <i>koehleri</i>	shrubby rockcress	E	B
<i>Aster vialis</i>	wayside aster	E	C
<i>Calochortus greenei</i>	Green's mariposa-lily	T	B
<i>Calochortus howellii</i>	Howell's mariposa-lily	T	B
<i>Camassia leichtlinii</i> var. <i>leichtlinii</i>	great camas		A
<i>Cypripedium californicum</i>	California lady's slipper	T	B
<i>Cypripedium montanum</i>	mountain lady's slipper	T	A
<i>Darlingtonia californica</i>	California pitcherplant	T	C
<i>Dicentra formosa</i> (spp. <i>oregana</i>)	Oregon dicentra	E	C
<i>Frasera umpquaensis</i>	Umpqua swertia	T	C
<i>Kalmiopsis leachiana</i>	kalmiopsis		C
<i>Lathyrus holochlorus</i>	thin-leaved peavine	T	B
<i>Lewisia cotyledon</i> var. <i>howellii</i>	imperial lewisia	T	B
<i>Limnanthes gracilis</i> var. <i>gracilis</i>	slender meadow-foam	T	B
<i>Mimulus pygmaeus</i>	pygmy monkey flower		C
<i>Perideridia erythrorhiza</i>	false caraway	T	B
<i>Phacelia capitata</i>	scorpion weed	T	A,B
<i>Phacelia verna</i>	Umpqua phacelia	T	A,B
<i>Plagiobothrys hirtus</i> (spp. <i>hirtus</i>)	rough allocarya		C
<i>Romanzoffia thompsonii</i>	romanzoffia	T	A
<i>Sidalcea cusickii</i>	Cusick's checker-mallow	T	B
<i>Synthyris missurica</i> (spp. <i>hirsuta</i>)	Howell's grouse flower		C
<i>Thlaspi montanum</i> var. <i>siskiyouensis</i>	pennycress	T	A,B
<i>Viola lanceolata</i> var. <i>occidentalis</i>	western bog violet	T	C

¹ Threatened (T), endangered (E), undesignated to date (blank). All species are designated as Bureau Sensitive Species by the Oregon State Director.

² Observed; on BLM-A, on other lands in the SYUs - B, Unobserved - C.

Animals

Terrestrial Animals

Animal distribution, diversity and abundance are dependent on various factors: of primary importance is vegetation. Each vegetational zone described in the previous section contains a variety of plant communities which may be in different successional stages. Each successional stage has a unique structure, and it is primarily this structure to which animal communities respond. The differences in communities, successional stages and structure provide habitat diversity and account for the variety of animals found in the planning area.

Successional stages are dynamic. They are always progressing toward their climax form, and during this progression their animal components are also changing. Progress toward climax can be curtailed at any point by outside influences, either natural or artificial. For instance, fire or logging may set back succession, and those animal species associated with the current stage will be replaced with those adapted to exist in the early successional stages.

Modifying or removing one particular stage, e.g., old growth, has a significant effect on those individuals and species occurring there. It is recognized that these effects do not stop with just those species, as the ecosystem as a whole is altered by the modification of one of its parts. Certain results may be harmful to some species and beneficial to others, but all are affected.

There are 32 species of amphibians and reptiles, 184 species of birds and 70 species of mammals that occur or probably occur in the planning area. Some species of animals are quite restricted in their habitat requirements, while others have a wide tolerance. For instance, the robin occurs in most habitat types while the northern spotted owl is much more restricted.

Appendix D lists those species of terrestrial vertebrates occurring in the planning area, some information on their habitat requirements and what is known of the status of their population and habitat.

From the perspective of all ownerships, the progression toward climax on intensively managed lands in the SYUs has been halted and reverted to early successional stages by planned timber management activities. In 1930, for example, most of the forest land acreage supported mature and old growth stands. The most recent inventories (Appendices E and F) show (Table 2-8) a greater diversity than that which existed under more "natural" conditions 50 years ago.

The present diversity, however, is a transitory condition. The forest management activities that created the current diversity on the commercial forest land base will, if carried to the planned conclusion, result in a situation where the oldest forest stands will be 80 years of age. Since approximately 71 percent of the area is not

controlled by the BLM, this is the situation that is most likely to occur on most of the area.

Habitat structure for all lands within the SYUs regardless of ownership or administration cannot be accurately calculated. However, based on data from a variety of sources, habitat structure for the entire area was estimated for all forest lands and is shown in Table 2-10. The "all lands" category consists of forest lands within Douglas County east of the crest of the Coast Range. Total land area is approximately 1.4 million acres. Bureau forest lands in the table approximate 404,000 acres.

Old-growth forests provide optimum habitat for a variety of animal species (see Appendix D) and are important to the entire forest ecosystem (Franklin et al. 1981). Old-growth habitat totals 110,900 acres or 27 percent of Bureau-managed forest lands in the SYUs (Tables 2-8 and 2-10).

Other types of habitat exist and can be modified by forest management practices. Of special concern are snags. Snags provide optimum habitat for 33 species and are used to some extent by 47 other species of birds and mammals in the SYUs (see Appendix D). That cavity-nesting birds feed on insects and play an important part in control of forest insect pests has been well reviewed by Thomas (1979).

Table 2-10 Habitat Structure of Forest Lands in the SYUs (by percent)

Habitat Age	All Forest Lands	BLM	BLM Habitat as a Percent of All Forest Lands*
Grass/Forb (non-stocked and 0-7 years)	15	9	16
Brush/Seedling (8-15 years)	17	10	17
Pole/Sapling (16-45 years)	25	14	16
Young 2nd Growth (46-115 years)	18	20	32
Mature (116-195 years)	9	20	66
Old Growth (196+ years)	16	27	47

* This column indicates, for example, that while 27 percent of BLM land is old growth, this is 47 percent of all old growth in the defined area.

Source: USDI, BLM; USDA, FS; Oregon Department of Forestry; Oregon Division of Parks and Recreation.

Under natural conditions, snags occur throughout the forest as a result of fire, disease and other factors. Timber harvest practices generally result in their removal for safety and fire prevention. Recent snag surveys by district personnel revealed an average of 0.1 snags per acre in coniferous forests less than 15 years of age under BLM administration. Due to the large amount of older forest lands, snag densities are currently at high levels, although distribution is not even.

Riparian zones are an extremely important habitat because they are used to a greater extent by a greater variety of species than any other habitat. Of the 286 species of terrestrial vertebrates found in the planning area, 82 find their optimum habitat in riparian zones while another 170 species use this habitat for part of their overall needs (see Appendix D).

In western Oregon riparian zones vary in width; generally, the larger the stream the wider the riparian zone. Vegetation within these areas includes plants only found in association with water as well as others including hardwoods and merchantable softwoods.

Currently, there are about 22,800 acres of riparian habitat on BLM-administered lands in the SYUs (USDI, BLM 1980a). Approximately 12,150 of these acres are along small first and second order streams. Because of the intermittent nature of these streams, the riparian habitat is not as well developed as on larger rivers and is more nearly like the adjacent upland habitat.

The riparian habitat on third order and larger streams represents about 3 percent of the forest land base. Some of this has been altered by past timber management practices and is in less than optimum condition.

Elk are not evenly distributed. While limited numbers in scattered herds do occur in the other areas, elk are concentrated in the Tyee area, which includes Powell, Basin, Wolf, Cougar and Hubbard Creek drainages. Habitat on BLM lands in this area is currently in the following condition:

Forage Area	Hiding and Escape Cover	Thermal Cover	Survival Cover*
0-15 years 15%	16-45 years 17%	46-120 years 12%	120+ years 56%

* Survival cover can be substituted for thermal cover but thermal cover can not be substituted for survival cover.

Source: USDI, BLM 1980a and district personnel.

The mature and old growth components are important to elk if optimum or near optimum populations are to occur. In times of extreme temperatures they function as survival cover, providing forage, temperature moderation and snow interception (Jenkins and Starkey 1980, De Calesta and Witmer 1980, Smithey et al. 1982). Much of the adjacent land under other ownership has been cut over and provides forage and escape cover. It is primarily Bureau-managed lands that

supply the thermal cover component.

Fish

Salmonids are the most important group of fish found in the SYUs. Other native species such as sculpins, suckers, dace and squawfish are also present within the area.

Introduced species such as brown bullhead, smallmouth bass, largemouth bass and shad are also present and becoming an important fishery. With the exception of information concerning salmonids in the North Umpqua River, there is little population data available. There is even less available when limited to BLM land. It can be assumed that current habitat conditions and fish populations reflect past land management actions and fish harvest regulations. In the case of anadromous fish, the ocean habitat becomes a third component influencing population levels.

Timber management on all lands has been the most significant land management action. Changes in timber management practices beginning in the 1960's and natural reestablishment of streamside vegetation on lands logged earlier have resulted in an improvement to stream fish habitat.

To some extent, all salmonids have the same or similar habitat requirements such as temperature, dissolved oxygen, spawning habitat and food supplies. Although there are strong similarities in some streams, there are highly varied population levels when one species is compared to another (see Table 2-11).

The North Umpqua Resource Area is rated as good spring chinook habitat and fair fall chinook habitat. Both races have similar habitat requirements but the North Umpqua has never supported comparable populations. Similar comparisons can be made between summer and winter steelhead or steelhead and coho salmon.

Recognizing these and other differences, Table 2-11 was prepared showing information by BLM Resource Area. Examples of streams in each resource area are as follows:

Drain Resource Area: Smith River and Wolf Creek

North Umpqua Resource Area: North Umpqua and Little River

South Umpqua Resource Area: Myrtle Creek and Days Creek

Dillard Resource Area: Cow Creek and 12 Mile Creek

Table 2-11 Salmonid Fish Habitat and Populations

	Spring Chinook	Fall Chinook	Coho	Winter Steel- head	Summer Steel- head	Sea-run Cutthroat	Resident Trout
Drain Resource Area							
Miles of Habitat (BLM)	9	20	79	79	9	79	108
Miles of Habitat (other ownership)	46	66	255	255	46	255	297
Habitat Quality	I	F	P	F	I	P	F
Wild Fish Population Trend	I	S	D	S	I	D	D
Hatchery Supplement	No	No	2	No	No	No	No
North Umpqua Resource Area							
Miles of Habitat (BLM)	8	8	18	34	28	34	57
Miles of Habitat (other ownership)	71	71	105	154	45	154	275
Habitat Quality	G	F	P	F	G	P	F
Wild Fish Population Trend	S	S	D	S	S-I	D	S
Hatchery Supplement	40% ³	No	2	No	50% ³	No	95% ⁴
South Umpqua Resource Area							
Miles of Habitat (BLM)	2	2	26	26	—	26	57
Miles of Habitat (other ownership)	46	46	142	142	—	142	214
Habitat Quality	P	P	P	P	—	P	F
Wild Fish Population Trend	D	I	D	S-I	—	D	S-D
Hatchery Supplement	No	No	No	50% ³	—	No	95% ⁴
Dillard Resource Area							
Miles of Habitat (BLM)	—	6	24	24	—	24	48
Miles of Habitat (other ownership)	—	44	147	147	—	147	162
Habitat Quality	—	P	P	F	—	P	F
Wild Fish Population Trend	—	I	D	S-I	—	D	D
Hatchery Supplement	—	No	No	50% ³	—	No	No

KeyE = Excellent
G = GoodF = Fair
P = PoorS = Stable
I = Increase

D = Decrease

¹ Only present during passage to and from the ocean.² Release of hatchery reared smolts initiated but too soon for adult returns.³ Percentage of total adult run attributable to hatchery reared smolts.⁴ Percentage of trout harvest attributable to hatchery reared legal sized fish.

Source: USDI, BLM 1980a, and BLM district personnel.

Table 2-12 Threatened and Endangered Species of the Roseburg SYUs

Species	Federal Status	Oregon Status
Northern bald eagle <i>Haliaeetus leucocephalus alascanus</i>	T	T
Northern spotted owl <i>Strix occidentalis caurina</i>		T
Columbian white-tailed deer <i>Odocoileus virginianus leucurus</i>	E	E

T = Threatened
E = Endangered**Threatened and Endangered Animals**

There are three species of animals officially listed by the U.S. Fish and Wildlife Service and/or the State of Oregon as threatened or endangered that occur at least occasionally in the SYUs. Table 2-12 lists those species and their status.

The bald eagle is a regular inhabitant of the SYUs and there are two pairs known to nest on BLM-administered land.

The northern spotted owl is a permanent resident of the SYUs. On Bureau-administered lands, there are 55 habitat units, each known to support one pair of owls. An additional 30 locations have been identified as occasionally containing owls. These may be juveniles or single birds. Inconsistent sighting and the quality of the habitat make it unlikely these areas are capable of supporting breeding pairs.

The 55 habitat units were judged to be in the following condition:

Poor	4	Very Good	11
Fair	12	Excellent	9
Good	19		

The criteria used to judge the conditions were:

Poor =	<150 acres old growth 1,050 acres <80 years
Fair =	<300 acres old growth 900 acres <120 years
Good =	300+ acres old growth 450 acres 30-200 years 450 acres <30 years
Very Good =	500+ acres old growth 200 acres 120-200 years 200 acres 30-120 years 300 acres <30 years
Excellent =	700+ acres old growth 200 acres 120-200 years 100 acres 30-120 years 200 acres <30 years

In the opinion of the BLM district biologist, those units in the poor habitat category are extremely marginal and will eventually fail to support owls.

An additional 63 pairs of owls have been recorded on lands of other ownership within the planning area, primarily on lands administered by the U.S. Forest Service.

The Columbian white-tailed deer is a resident of the oak-ash bottom lands and the oak-madrone uplands and is found on Bureau-managed lands, but predominantly on lands in other ownerships.

The U.S. Fish and Wildlife Service has not designated any critical habitat under Section 4 of the Endangered Species Act within the SYUs. However, BLM identified essential habitat totaling 37 acres for the Columbian white-tailed deer and 3,475 acres for the bald eagle was delineated in the SYUs and recommended to the U.S. Fish and Wildlife Service for further consideration.

Recreation

Developed recreation sites on public land include Gunter, Tyee, Lone Rock, Mill Pond, Rock Creek, Scaredman, Susan Creek Recreation Area, Cavitt Creek, Wolf Creek Trail and Emile (see Figure 1-1). Each site (except trails) has facilities for overnight camping and/or picnicking. Annual use at the 10 developed sites is approximately 19,000 visitor days, with about 43 percent attributable to overnight use. Opportunities are also available for dispersed camping and picnicking throughout the SYUs.

Fishing for anadromous species is a major recreational activity in the SYUs. Some fishing for trout and warm water game fish also occurs. Most stream fishing use is in the Umpqua (Main, North and South), Smith and Little Rivers, Rock Creek and Cow Creek. The North Umpqua River is nationally known for its anadromous fishery.

The major hunting activity on public land is for deer and elk. Hunter success is affected by game populations, ease of movement and shooting opportunities. Hunting with hounds for bear and cougar also occurs throughout the SYUs.

Most general sightseeing use occurs in association with travel along major roads. Some people also visit public lands with specific sightseeing goals or may include sightseeing as a part of other activities. Examples of such areas with opportunities for this use include the North Umpqua River Highway, Cavitt Creek Falls, Maude "S" Mine, Susan Creek Indian Mounds, Main and South Umpqua River, Susan Creek Falls, Wolf Creek Falls and a number of scenic overlooks.

High quality opportunities are available for swimming, canoeing, kayaking and floatboating. Most use occurs on the Umpqua River (Main, North and South Forks) and Cow Creek. Off-road vehicle (ORV) use in the SYUs is generally limited to existing roads and trails. In recent years this recreational use has increased rapidly. Although use is low, opportunities are available for areawide berry picking and horseback riding, goldpanning and rock collecting.

The Nationwide Rivers Inventory prepared by the Heritage Conservation and Recreation Service (HCRS) and National Park Service (NPS) has identified sections of the Umpqua and North Umpqua as potential national wild, scenic or recreational rivers crossing public land within the SYUs (USDI, HCRS 1980). The North Umpqua River has also been identified by the State of Oregon for potential State Scenic Waterway designation. The State Transportation Commission reviewed the study but chose not to continue the designation process for the North Umpqua River (Lilly 1981).

Table 2-13 summarizes visitation attributable to major recreation activities in the SYUs. Recreational demand projections to 1990 are also displayed.

Cultural Resources

BLM is required by law and executive order to identify, protect and enhance significant cultural resources on public lands. A number of procedures, including those specified in 36 CFR 800.4(a), were used to identify the cultural resources within the SYUs.

Table 2-13 Estimated Current and Projected Visitation Attributed to Major Recreation Activities

Activity	Current Visitation ¹ Visitor Days/Year		1990 Demand Projection ² Visitor Days/Year	
	Total ³ (Douglas County)	BLM (Roseburg District)	Total ³ (Douglas County)	BLM (Roseburg District)
Hunting				
Big game	194,060	23,250	204,630	24,460
Upland game	35,120	2,510	37,330	2,670
Fishing				
All anadromous	124,000	23,670	186,000	35,510
Resident cold-water	103,800	19,190	129,750	23,990
Resident warm-water	5,200	490	10,400	980
Camping	796,300	8,220	978,000	10,100
Hiking	23,560	420	28,940	520
Horseback riding	25,390	460	31,180	560
Hound sports	182,330	3,280	223,930	4,030
ORV use	500,330	9,010	614,500	11,070
Other day use⁴	598,670	10,780	735,270	13,240
Total	2,588,760	101,280	3,184,930	127,130

¹ Based on data collected between 1976-1978.

² Based upon projections in USDI, BLM (1980b), conversations with Oregon Department of Fish and Wildlife staff and Oregon Department of Transportation (1978).

³ Total visitation includes use in the coastal region where public lands are limited.

⁴ Total area day use visitation excludes urban and semi-urban activities not generally associated with forest lands administered by BLM.

Source: USDI, BLM 1980b.

A survey of existing cultural resource information (Class I survey) has been completed for the SYUs (Honey and Hogg 1980) through a compilation of the area's existing site record data. A thorough survey to locate and identify cultural resources is accomplished prior to ground disturbance or ownership changes. The results of this intensive survey are documented in each site specific environmental assessment.

The criteria used to assess the eligibility of identified cultural resources for inclusion in the National Register of Historic Places are described in 36 CFR 1202.6.

Prehistoric Sites

While little of the area has been field surveyed for prehistoric resources due to its steep, heavily forested terrain, there are 90 recorded prehistoric sites on or near public land within the SYUs (Honey and Hogg 1980). Most are trailside and/or hunting camps associated with Indian use of upland resources. An area's available resources such as water, plant and animal foods, workable stone, or amenable terrain probably determined the nature and location of sites.

Examples of areas within the SYUs which exhibit a relatively high density of prehistoric sites include

Upper Little River, Susan Creek vicinity, Upper Middle Creek, Camas Valley-Boulder Creek and the White Rock-Dompier Creek Region.

A group of rock mounds in the Susan Creek vicinity is currently listed on the National Register of Historic Places (see Glossary).

Historic Sites

There are 41 inventoried historic sites on or near BLM-administered land within the SYUs (Honey and Hogg 1980). About 80 percent of the sites have not been formally recorded and are in need of further documentation. Most historic sites in the SYUs relate to fur trade, settlement, transportation, mining and logging. None of the historic sites on public land is currently listed on the National Register of Historic Places.

Paleontologic Sites

No important or scientifically unique paleontologic sites have been identified in the SYUs. However, all reports of fossil-bearing deposits are examined by qualified personnel to avoid destruction of such resources.

Visual Resources

Visual resources are the land, water, vegetation, animals and the other features (as described in this chapter) that are visible on public lands. Visual resource management (VRM) objectives have been developed based on three factors (BLM Manual 8400). These factors are scenic quality, visual sensitivity and distance zone (see Glossary). Examples of high to moderate scenic quality and visually sensitive areas on public land include Coles Valley, Umpqua River, Berry Creek Reservoir, Bushnell Rock, Susan Creek Falls, North Umpqua River, Cooper Creek Reservoir and portions of the viewshed from Interstate 5.

VRM classes specify management objectives and allow for differing degrees of modification. Objectives for each VRM class follow:

Class I: Provides primarily for natural ecological change (highest levels of protection). Generally includes highly scenic and/or highly sensitive areas.

Class II: Changes in any of the visual resource basic elements (see Glossary) caused by a management activity should not be evident in the characteristic landscape. A change may be seen but should not attract attention (retention of scenic quality). Generally includes areas with high to moderate scenic quality and/or sensitivity.

Class III: Changes in the basic elements caused by a management activity may be evident in, but should remain subordinate to, the existing characteristic landscape (partial retention of scenic quality). Generally includes moderate scenic quality and/or sensitivity.

Class IV: Changes may attract attention and be dominant landscape features but should reflect those basic elements inherent in the characteristic landscape (modification of scenic quality - lowest level of protection). Generally includes areas with moderate to low scenic quality that are seldom seen.

Figure 2-3 shows VRM classes as recommended through the visual resource inventory and evaluation of the existing environment.

Wilderness Values

Under the terms of the Federal Land Policy and Management Act of 1976 (FLPMA), roadless areas of 5,000 acres or more that have wilderness characteristics are to be reviewed within 15 years for possible wilderness designation. The 1976 Act also states that in the event of inconsistency between it and the O&C Act insofar as they both may relate to management of timber resources, the O&C Act prevails. Accordingly, the wilderness

review provisions do not apply to revested Oregon and California Railroad grant lands suitable for sustained yield management as commercial timber lands.

No areas within the SYUs are proposed wilderness study areas. The intensive wilderness inventory and accompanying maps for Oregon and Washington are available in the Oregon State Office.

Areas of Critical Environmental Concern

Areas of Critical Environmental Concern (ACECs) are areas within the public lands where special management attention is required to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources, or other natural systems or processes, or to protect life and safety from natural hazards (FLPMA Section 103(a)). Designation of an area as an ACEC does not necessarily preclude development but rather ensures the protection of sensitive values in those cases where appropriate development may take place. Following designation, activity plans are prepared to translate special management requirements for each area into on-the-ground implementation actions.

Of the 15 areas nominated for ACEC consideration during the Roseburg District's planning process (see Table 2-14), seven were found to be qualified for ACEC designation. The decision to designate any or all of these areas as ACECs will be part of the Management Framework Plan decision for the SYUs, to be made following completion of this EIS.

Special Areas

The 28-acre Myrtle Island timber preservation area (see Glossary) was established in 1951 by Public Land Order Number 754 to preserve an old growth stand of Oregon myrtle. This Umpqua River island also has scattered old growth Douglas-fir (Franklin et al. 1972). Further, the area is a designated Research Natural Area (see Glossary). Myrtle Island has also been identified by the National Park Service (NPS) as a potential National Natural Landmark (Chilcote et al. 1976). Designation of a site as a National Natural Landmark (see Glossary), a program administered by the NPS, is not a land withdrawal and would not affect BLM jurisdiction to manage the area.

Beatty Creek is a designated Research Natural Area (RNA). This 173-acre area has a representation of Jeffrey pine on serpentine soil in the Siskiyou Mountains physiographic province.

Table 2-14 Nominated and Potential Areas of Critical Environmental Concern

Site Name	Approximate Size (acres)	Description	Primary Resource Values	Remarks
QUALIFIED FOR ACEC DESIGNATION¹				
1. Brad's Creek	137	Old growth forest, bald eagle habitat	Wildlife, Scenic	
2. Golden Bar	217	Old growth forest, bald eagle habitat, cultural resources	Wildlife, Scenic	
3. North Umpqua River	1,620	Anadromous fishery, high scenic value	Wildlife, Scenic	
4. Tater Hill	169	Large, active landslide	Geologic	Proposed Research Natural Area (RNA)
5. Myrtle Island	28	Old growth Oregon myrtle and Douglas-fir	Botanic, Scenic	Currently designated RNA and timber preservation area
6. Beatty Creek	173	Pure stand of Jeffrey Pine and a grass community on serpentine soils at low elevation	Botanic	Designated RNA
7. North Myrtle Creek (Slideover)	480	Coniferous forest mixture in the Umpqua River Valley	Botanic	Proposed RNA (240 acres)

NOMINATED BUT NOT QUALIFIED FOR ACEC DESIGNATION²

1. Whistler's Woodlands	22	Oak woodlands, Columbian white-tailed deer habitat	Wildlife	
2. Bluff Creek Bluffs	120	Candidate threatened or endangered plant	Botanic	
3. Rice-Bushnell Divide	40	Candidate threatened or endangered plant	Botanic	
4. Canyon Mountain	80	Candidate threatened or endangered plants	Botanic	
5. North Myrtle Creek Watershed	13,100	Large, geologically complex basin	Natural Hazard	
6. Wood Creek	360	Old growth timber, spotted owl habitat	Wildlife	
7. Dompier Creek	240	Several landslides, slump ponds	Geologic Hazard	

¹ Two identification criteria (relevance and importance) derived from the Federal Land Policy and Management Act (1976) were applied to evaluate all areas nominated for ACEC designation. While Myrtle Island, Beatty Creek and North Myrtle Creek met these criteria, other measures would be adequate to protect the significant resource values in these areas. Myrtle Island and Beatty Creek are currently designated Research Natural Areas. North Myrtle Creek is a proposed Research Natural Area.

² Areas failed to meet the criteria of importance, as described in the August, 1980 Final Guidelines for Areas of Critical Environmental Concern (USDI, BLM 1980d).

Other areas with potential for RNA designation include Woodruff Canyon lands, Old Fairview, Tater Hill and North Myrtle Creek. The Little River Arch has potential for Outstanding Natural Area (see Glossary) designation. Red Pond is a proposed environmental education area.

The BLM currently has five environmental education use permits on public land. These permits provide for environmental education and

study of public land resources but do not involve special designation or facility development.

Socioeconomic Conditions

During 1975 through 1977 logs from the Roseburg District were trucked to destinations in Douglas (89.9 percent), Lane (7.3 percent), Coos (1.9 percent), Josephine (0.1 percent) and Jackson counties (0.8 percent). These five counties taken

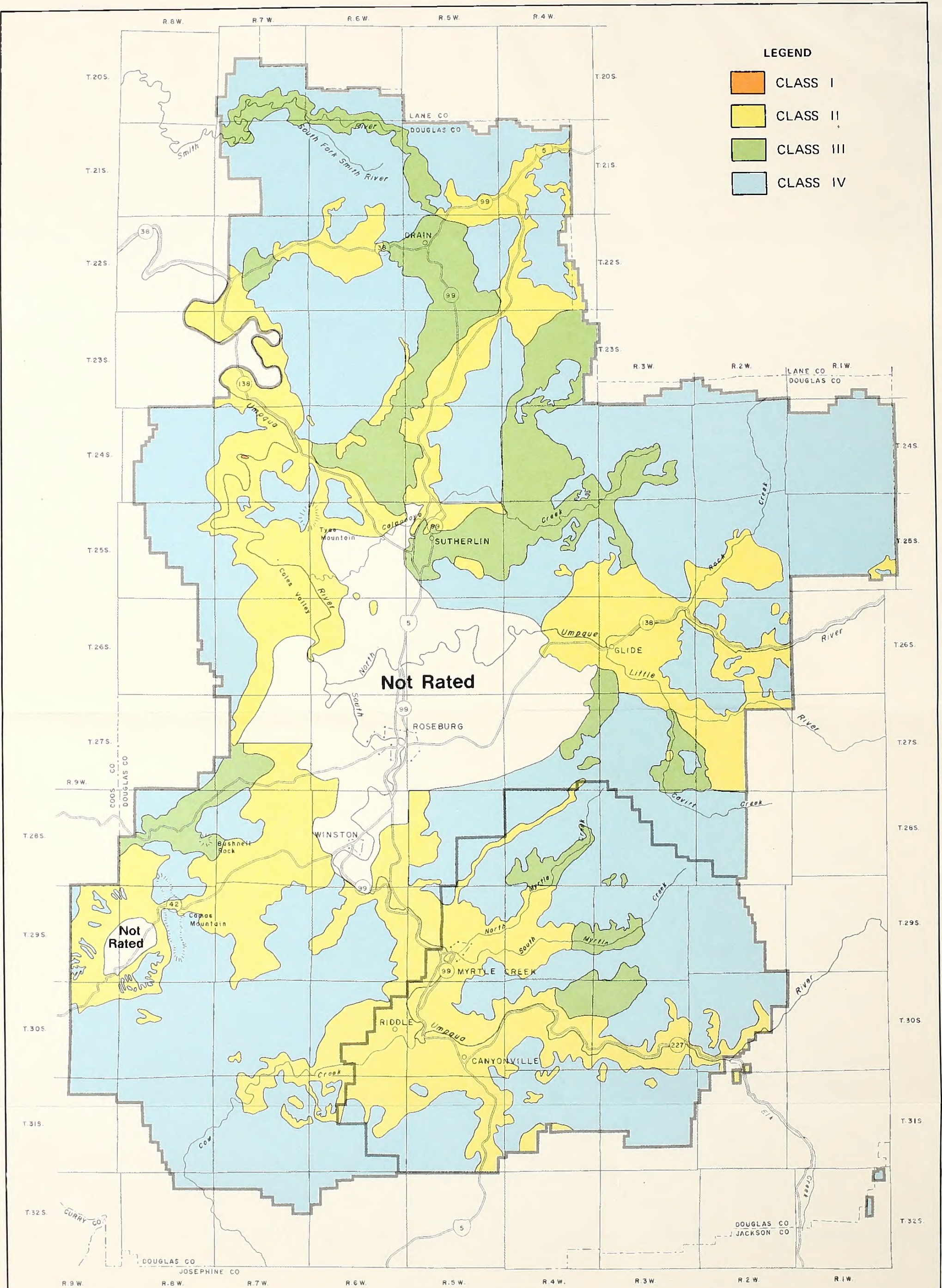
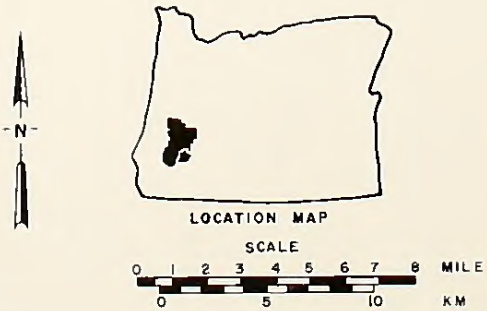


FIGURE 2-3

VISUAL RESOURCE

MANAGEMENT CLASSES



U. S. DEPARTMENT OF THE INTERIOR

BUREAU OF LAND MANAGEMENT

ROSEBURG DISTRICT

DOUGLAS AND SOUTH UMPQUA

SUSTAINED YIELD UNITS

Roseburg Environmental Impact Statement Area

1982

together are evaluated here as the regional economy affected by the action.

The region is divided by the Coast Range into an eastern section with a larger and more dispersed population in the Willamette, Umpqua and Rogue River Valleys and a western section with a smaller population concentrated near Coos Bay and in the Coquille River Valley.

The average level and recent changes in population, employment, personal income and public revenue within the regional economy are the quantitative indicators of social well-being discussed below. Although this is not a complete list, these four indicators were selected because other indicators tend to move consistently up or down with them and these data have been tabulated similarly for a number of years.

As shown in Table 2-15, the population of the region has increased more than 30 percent over the last decade and now exceeds 600,000. While paralleling a nationwide shift of population westward, the rate of growth in the region

exceeded substantially the rate of growth in Oregon, which in turn exceeded the population growth rate in the United States.

Seventy-four percent of the region's population growth has been net migration into the region (Seidel 1981). Surveys of recent immigrants imply that many are coming to southwestern Oregon in search of a perceived quality of life not found in major metropolitan areas but available in small urban and rural environments (Stevens 1981). A significant proportion of the newcomers immigrated to the region without having first secured employment (Stevens 1980).

This immigration plus an increase in the proportion of women employed or seeking employment caused the labor force to grow faster than total employment (Table 2-16). For example, in Douglas County, the annual rate of job creation was 2.17 percent while the labor force was increasing at 2.91 percent annually.

Table 2-15 Population, 1960-1980

County	1960	1970	1980	Annual Growth Rate	
				1960-70	1970-80
Douglas	68,458	71,743	93,748	0.5%	2.7%
Lane	162,890	213,358	275,226	2.7	2.6
Coos	54,955	56,515	64,047	0.3	1.3
Josephine	29,917	35,746	58,820	1.8	5.1
Jackson	73,962	94,533	132,456	2.5	3.4
Region	390,182	471,895	624,297	1.9%	2.8%
Oregon	1,768,687	2,091,533	2,633,105	1.7%	2.3%
United States	179,323,175	203,235,298	226,504,825	1.3%	1.1%

Source: U.S. Dept of Commerce Census of Population, years indicated.

Table 2-16 Components of Population Change, 1970-1980

County	Population Change 1970-1980	Natural Increase (Births minus deaths)	Net Migration	Net Migration as a Percent of Population Change
Douglas	22,015	7,332	14,683	67
Lane	59,825	19,657	40,168	67
Coos	7,532	4,391	3,141	42
Josephine	23,109	2,224	20,885	90
Jackson	37,923	5,867	32,056	85
Region	150,404	39,471	110,933	74

Source: Personal communication, Karen Seidel, Bureau of Governmental Research and Service, University of Oregon, Eugene, Oregon, September 1981.

Table 2-17 Average Size and Recent Growth of the Labor Force and Employment in Industries

	Douglas County Avg. 1977-1980	Douglas County Compound Annual Growth 1972-1980 (%)	Regional Economy Avg. 1977-1980	Regional Economy Compound Annual Growth 1972-1980 (%)	Oregon Avg. 1977-1980	Oregon Compound Annual Growth 1972-1980 (%)
Civilian Labor Force	38,800	2.91	270,500	3.75	1,202,500	3.58
Total Employment	35,000	2.17	246,300	3.23	1,116,800	3.38
Wage & Salary Employment	30,800	2.46	210,900	3.41	1,009,100	3.77
All Manufacturing	10,200	-1.46	48,300	.53	216,600	1.92
Lumber & Wood	8,500	-2.05	35,100	-2.64	77,700	-1.37
Other Durable Goods	500	-.81	6,000	6.02		
All Non-Manufacturing	20,600	4.75	162,500	4.87	792,400	4.30
Trade	5,600	4.44	50,100	5.10	245,500	4.67
Services & Miscellaneous	4,300	6.83	35,900	6.72	178,600	5.65
Government	6,900	3.85	46,000	4.05	196,400	3.18

¹ Not comparable with the same category for Douglas County or the Regional Economy.

Source: Computations by EIS staff of data obtained from the Research and Statistics Section, Employment Division, Oregon Dept. of Human Resources

Table 2-18 Total and Rate of Growth of Labor and Proprietors' Income in Selected Industries Affected by Timber Management in the Roseburg District

	Douglas County Avg. 1977-1979 (\$1,000,000)	Douglas County Compound Annual Growth 1972-1979	Regional Economy Avg. 1977-1979 (\$1,000,000)	Regional Economy Compound Annual Growth 1972-1979	Oregon Avg. 1977-1979 (\$1,000,000)	Oregon Compound Annual Growth 1972-1979
Total Labor and Proprietors' Income by place of work	\$ 493.5	11.97%	\$3,073.5	12.96%	\$19,792.8	11.40%
Durable Goods Manufacturing	197.0	10.13%	837.1	10.60%	3,079.1	11.79%
Trade	57.9	12.42%	555.2	13.81%	2,923.5	11.25%
Services	52.9	15.57%	454.8	15.62%	2,381.9	12.40%
Federal Gov't., Civilian	26.6	10.99%	102.3	12.31%	505.7	7.97%
State and Local Government	253.1	11.77%	368.9	12.55%	1,864.2	9.76%
Per Capita Personal Income (in actual \$)	\$7,012	9.57%	\$6,984	10.24%	\$ 8,047	9.38%

Source: Computations by EIS staff of data obtained from the Regional Economic Information system U.S. Department of Commerce, Bureau of Economic Analysis, April 1981.

Employment and income growth in the region's trade and service sectors was strong in the 1970's (Tables 2-17 and 2-18). The growth rates in the region outpaced Douglas County, which was ahead of the State totals in both categories. A reduction of the manufacturing base in Douglas County and a lack of significant growth in manufacturing employment in the regional economy during the decade are of local concern (C.C.D. Economic Improvement Assoc. 1978, 1979). Non-manufacturing employment within the region and the State has increased, paralleling a national trend. Whether projected long-term declines in lumber and wood products employment (Burden 1977; Flacco 1978; C.C.D. Economic Improvement Assoc. 1978) can be offset by continued growth in the non-manufacturing sector and local programs promoting diversification is still unknown (Oregon Department of Human Resources 1979, 1980; C.C.D. Economic Improvement Assoc. 1978, 1979; Douglas County 1980).

Statewide, total employment in the lumber and wood products sector declined at a 1.37 percent annual rate (Table 2-17) and total employment in manufacturing increased by more than 29,100 jobs, an average annual increase of almost 2 percent. To date, much of Oregon's diversification and employment growth in manufacturing has been in the Portland, Salem, Eugene-Springfield and Medford metropolitan areas. The remainder of western Oregon continues to be highly dependent on agriculture and lumber and wood products for significant proportions of its income and employment. Since southwestern Oregon is dominated by mountainous forest land, agricultural options are limited. Thus, overwhelmingly, the region's primary source of income continues to be derivatives of the timber resource -- logs, lumber, plywood and other panel products, chips, pulp and paper.

Receipts from the sale or use of resources found on O&C, public domain and Coos Bay Wagon Road (CBWR) lands are distributed to State and local governments through distribution formulas established by Congress and the Oregon legislature. Fifty percent of the revenue from all O&C lands in the State is distributed among the counties with O&C land in proportion to the 1915 assessed value of the O&C lands in each county. Tables 2-19 and 2-20 show the importance of O&C revenue distribution to individual counties. The summary data reported in Table 2-19 highlight principal sources of revenue (as a percent of total) and revenue per capita for Douglas County, all counties in the EIS economic region and all counties in Oregon. O&C revenues constitute a significant portion of revenue from all sources for

Douglas, Coos, Lane, Jackson and Josephine counties. The resulting high level of public revenue per capita gives these counties opportunities to provide a diversity and level of public services more difficult to finance elsewhere in Oregon (Jensen 1979). The value of these disbursements to the O&C counties can be equated in terms of property tax equivalents--the amount per \$1,000 assessed value which property tax levies would have to be increased to raise an amount of revenue equal to the county's share of O&C receipts.

Payments are made to local governments from CBWR land revenues in the form of timber severance and property taxes. Severance tax payments are distributed to local tax districts in

Table 2-19 County Revenue Sources as a Percentage of Total Revenues and County Revenues Per Capita for Fiscal Year 1977-78

Source	Douglas		Regional Economy		All Oregon Counties	
	% of Total Revenues	Per Capita	% of Total Revenues	Per Capita	% of Total Revenues	Per Capita
I. REVENUES FROM OWN SOURCES						
Tax Revenues:						
Property Taxes	4.2%	\$ 23.82	5.2%	\$ 16.27	16.6%	\$ 35.76
Other Taxes	0.0	.00	0.2	.72	1.7	.56
Local Non-tax Revenues:						
Licenses, Permits,						
Services Charges & Fees	2.8	15.67	4.2	12.94	5.1	10.91
Fines, Forfeitures & Court Fees	1.3	7.22	1.7	5.19	2.0	4.38
Interest Earnings	4.0	22.52	4.0	12.94	3.4	7.42
Public Service Enterprises	1.7	9.50	1.1	3.38	1.9	4.02
Other Local Non-tax Revenues	1.7	9.38	0.7	2.12	0.9	1.99
Subtotal: Revenues from Own Sources	15.6%	\$ 88.11	17.1%	\$ 53.17	31.6%	\$ 68.04
II. INTERGOVERNMENTAL REVENUES						
Federal Revenues:						
General Revenue Sharing	1.1%	\$6.14	1.6%	\$4.84	3.6%	\$7.81
Federal Land Revenue Sharing:						
National Forest Revenues	19.8	111.23	19.7	61.20	17.4	37.47
O&C Revenues	56.4	317.38	43.6	135.76	20.6	44.26
Payments in Lieu of Taxes	0.2	1.23	0.2	.61	0.7	1.48
Coos Bay Wagon Rd. Revenues	0.4	2.32	0.7	2.04	0.2	.49
Other Land Revenue Sharing	0.0	.21	0.0	.10	0.2	.37
Grants-In-Aid:						
Anti-Recession Payments	0.5	2.81	0.5	1.61	1.1	2.45
Countercyclical Public Works	0.0	.00	0.9	2.95	1.4	3.07
CETA	0.0	.25	1.2	3.72	2.7	5.83
Other Grants-In-Aid	0.0	.00	3.2	9.82	4.1	8.68
State Revenues:						
Shared Revenues	4.1	22.99	6.5	20.19	10.9	23.31
Grants-In-Aid & Others	1.5	8.37	3.5	10.92	4.2	9.12
Interlocal Revenues	0.4	2.03	1.3	4.20	1.3	2.69
Subtotal: Intergovernmental Revenues	84.4	\$474.96	82.9	\$257.96	68.4	\$147.03
TOTAL REVENUES FROM ALL SOURCES	100%	\$563.07	100%	\$311.12	100%	\$215.07

Source: Oregon Bureau of Governmental Research and Service, Revenue Sources of Oregon Counties Fiscal Year 1977-78, Information Bulletin No. 171, Eugene, Oregon, June 1979.

Table 2-20 O&C Revenue Distribution to Counties Expressed As Property Tax Rate Equivalent and As Percent Supplement to Total Levy, Fiscal Years 1977-1980

County	Amount per \$1,000 Assessed Value ¹				Percent Supplement to Levy ²			
	1977	1978	1979	1980	1977	1978	1979	1980
Benton	\$3.36	\$2.26	\$2.03	\$2.05	21.9	12.3	12.4	10.5
Clackamas	1.69	1.17	1.01	.90	6.8	5.4	5.5	4.6
Columbia	2.20	1.77	1.86	1.86	15.2	12.7	13.0	11.7
Coos	6.59	5.32	4.81	4.59	30.9	31.9	29.0	25.3
Curry	13.27	9.81	8.38	7.09	120.2	102.1	92.9	109.2
Douglas	14.47	12.44	11.59	11.50	90.0	110.3	103.8	79.5
Jackson	9.78	6.90	5.85	5.51	50.5	39.3	41.2	33.0
Josephine	18.23	11.78	10.04	9.56	119.1	74.4	89.8	63.0
Klamath	2.47	1.85	1.73	1.68	17.3	13.4	13.7	11.7
Lane	3.92	2.91	2.48	2.36	17.1	14.1	13.6	11.6
Lincoln	0.45	0.40	0.33	0.31	3.4	2.5	2.2	1.6
Linn	1.77	1.39	1.37	1.30	9.4	8.2	8.5	7.1
Marion	0.62	0.43	0.39	0.36	2.6	2.0	2.0	1.7
Multnomah	0.13	0.09	0.08	0.08	0.5	0.4	0.4	0.4
Polk	3.91	2.75	2.43	2.41	16.2	13.6	13.1	12.2
Tillamook	1.38	1.14	1.03	0.93	8.2	7.7	6.4	8.7
Washington	0.19	0.13	0.11	0.10	0.8	0.6	0.6	0.5
Yamhill	1.09	0.75	0.67	0.64	4.9	3.7	3.6	3.1
Average	\$3.01	\$2.19	\$2.54	\$1.81	13.6	10.9	10.9	9.5

¹ Represents county O&C distribution for fiscal year (ending September 30) divided by total assessed value (in thousands) on January 1 of same calendar year.

² Represents O&C distribution as percent of total property tax levy for following year, e.g., FY 1977 distribution as percent of 1977-78 levy.

Source: USDI, BLM 1979a and 1980e. BLM Facts-Oregon and Washington, 1979, 1980; Oregon Dept of Revenue, Oregon Property Tax Statistics, 1978; Oregon Dept. of Revenue, Dick Yates, telephone conversations, April 15, 1980, June 24, 1980; Oregon Department of Revenue, Vinh Ninh, telephone conversation, April 13, 1981.

Table 2-21 In-Lieu Tax Payment on CBWR Lands Administered by the BLM in Douglas County¹

Tax District	Average Annual Severance Tax Received ² (1979-1981)	Average Annual Property Tax Received ³ (1977-1981)	Average Budget Levy Submitted By Each Tax District (1979-1981)	Average CBWR Disbursements (1979-1981) as a Percent of Average Levy (1979-1981)
Douglas County	\$ 2,929	\$ 665	\$2,078,000	0.2%
Oakland School District I	207	68	1,230,000	<0.1%
Camas Valley School District 21	9,091	2,983	415,000	2.9%
Winston Dillard School District 116	23,575	5,850	3,018,000	1.0%
Douglas Education Service District	2,235	622	2,740,000	0.1%
Umpqua Community College	2,295	783	1,951,000	0.2%
Roseburg School District 4	0 ⁴	24	7,949,000	<0.1%

¹ Payments in-lieu of taxes are made to the county treasurer and distributed to tax districts.

² Severance tax is 6-1/2 percent of the value of the timber harvested.

³ Assessed value of forest land is a function of the price of second-growth Douglas-fir stumpage over the most recent three-year period.

⁴ The 27 acres of CBWR lands in this school district are not forested with commercial species.

Source: Douglas County Assessor, Douglas County Treasurer.

accordance with timber assessed values on CBWR lands prior to the institution of the severance tax. In-lieu property taxes are calculated at levy rates on the assessed value of land only. Table 2-21 shows the historical distribution of these payments in Douglas County.

A net of 4 percent of revenues from public domain lands is remitted to state governments. These revenues in Oregon are distributed to counties on the basis of total land areas for the benefit of county roads and bridges. Receipts from the sale of timber on public domain lands in the Roseburg District were \$902,700 in FY 1980 and \$461,700 in FY 1981. These receipts yielded \$36,100 to Oregon counties in FY 1980 and \$18,500 in FY 1981.

Timber Industry

Approximately one out of every four workers in Douglas County harvests, processes or transports some type of wood product (ratio of lumber and wood products employment to total employment, see Table 2-17). For the region, one out of every seven workers is actively engaged in the flow of wood products. In contrast, for all Oregon workers, only one in every 14 is employed in the wood products industry.

During 1977-78, 40 percent of all wages paid in Douglas County (in sectors covered by State and federal employment insurance programs) originated in the wood products sector. For the region, the same figure is 27 percent and for Oregon, 12 percent.

The Roseburg District plays a significant role in providing raw material to the lumber and wood products sector. For example, during the 1976-1977 period, 13.5 percent of the Douglas County harvest came from the Roseburg District (Table 2-22). BLM's Medford, Coos and Eugene Districts also administer land in Douglas County.

Table 2-22 Timber Harvest (MM bd. ft. Scribner long log volume) by Ownership Class, Douglas County

	All Ownerships	BLM	Roseburg District
1976	1,308.3	343.9	199.7
1977	1,269.1	299.5	147.6

Source: Oregon Department of Forestry and Roseburg District

Historical data underscore the role of BLM stumpage in log processing within Douglas County. These data show that sawmill and plywood and veneer facilities in the county have become increasingly dependent on BLM timber. Conversely, processors statewide are looking less and less to Bureau lands for log supply (Table 2-23).

The timber management program on the Roseburg District affects the regional economy employment and personal earnings in three ways: 1) the harvest and processing of the timber; 2) site preparation, replanting and subsequent management of harvested units; and 3) the disbursement of O&C revenues.

The economic effects of timber harvest, processing, reforestation, intensive management and O&C disbursements to counties in the region stem from the average annual harvest and the value of the sale units harvested. During the 1976-1980 period, harvest of BLM timber in the Roseburg District averaged 187.5 MM bd. ft. and the typical unit yielded \$157 per M bd. ft. (Table 2-24). This average annual harvest and value of receipts supported more than 3,200 jobs in the region, including over 2,400 jobs in Douglas County. The payrolls associated with this employment equaled \$32 million in Douglas County and \$50.1 million in the region (Table 2-25).

Fishing, Hunting and Other Recreation

The annual economic effects of expenditures made by persons engaged in commercial and sport fishing, hunting and general recreation are listed in Table 2-26. In total, the production of these three resource categories on Roseburg District BLM-administered lands generates the equivalent of 109 full-time jobs and \$568,000 in local personal income each year.

Social Concerns

Timber, as the main economic support of the local economy, greatly influences social attitudes and concerns of residents. Individual economic welfare is often closely related to the welfare of the timber industry. The current depression in the local economy has raised concern about the timber industry.

The fluctuations of the industry have required people to adjust to changes in their welfare. For example, Figure 2-4 shows the expansions and contractions which took place in the lumber and wood products sector in Douglas County between 1970-1980. While the average level of employment for the decade was 8,565, the average annual level of wage and salary workers ranged from a high of 9,150 in 1973 to a low of 7,600 in 1980. Furthermore, forecasts of a dwindling timber supply (Beuter et al. 1976, Stere et al. 1980, Rahm 1980, U.S. Forest Service 1980) in the Pacific Northwest and projections of declining lumber and wood products employment (Bruner and Hagenstein 1981) in one or two decades are likely to increase concern about the timber supply.

Table 2-23 Dependency of Log Processors in Oregon and Douglas County on BLM Timber (All processing estimates in M bd. ft.)

Origin of logs consumed by sawmills in Oregon by ownership class 1968¹, 1972² and 1976³

		All Ownerships	BLM	% BLM of Total Processed
1968	Douglas	532,340	167,408	31.4
1972	Douglas	632,863	233,868	37.0
1976	Douglas	519,915	222,236	42.7
1968	Oregon	5,863,324	740,227	12.6
1972	Oregon	6,140,629	801,034	13.0
1976	Oregon	5,404,346	642,920	11.9

Origin of logs consumed by plywood and veneer mills in Oregon by ownership class and county 1968¹, 1972² and 1976³

1968	Douglas	591,560	183,707	31.1
1972	Douglas	565,466	268,500	47.6
1976	Douglas	599,983	252,010	42.0
1968	Oregon	3,578,494	655,670	18.3
1972	Oregon	3,650,016	714,334	19.6
1976	Oregon	3,305,705	584,241	17.7

¹ Manack, Eugene R., Choate, Grover A., and Gedney, Donald R., Oregon Timber Industries: Wood Consumption and Mill Characteristics 1968, State of Oregon Dept. of Forestry.

² Schuldt, John P., and James O. Howard, Oregon Forest Industries, 1972 Wood Consumption and Mill Characteristics, OSU Special Report No. 427, Dec. 1974, 113 p.

³ Howard, James O., and Hiserote, Bruce A., Oregon's Forest Products Industry 1976, USDA Forest Service Resource Bulletin PNW-79, 1978.

Table 2-24 Harvest Sales and Receipts, BLM Timber in the Roseburg District (FY 1976-1980)

Fiscal Year	Sale (MM bd. ft.)	Removals (MM bd. ft.)	Value of Sales (\$1,000,000)	Value of Receipts (\$1,000,000)
1976	232.3	165.6	35.0	20.9
Transition Quarter	49.6	82.8	6.5	13.7
1977	188.8	212.2	29.1	39.2
1978	185.7	198.3	30.4	27.9
1979	188.1	169.9	45.5	27.2
1980	190.5	155.4	56.9	26.1

Average 12 month harvest, 1976-1980: 187.5 MM bd. ft.

Average value per M bd. ft. removed: \$157

Table 2-25 Average Annual Local Economic Effects of Timber Management on Lands Administered by the Roseburg District (1976-1980)

	Douglas County	Total for Regional Economy
Average Harvest Volume (MM bd. ft. Scribner Short Log Rule) 1976-1980	187.5	187.5
Number of Local Jobs Provided by Harvesting and Processing ¹	1,106	1,388
Annual Local Payroll Generated by Harvesting and Processing (\$1,000,000)	\$15.8	\$20.3
Number of Local Jobs Produced in Other Business Sectors Resulting from Payrolls Created by Harvesting and Processing ¹	1,106	1,331
Annual Local Payroll in Other Business Sectors Created by Harvesting and Processing (\$1,000,000) ²	\$10.4	\$13.8
Acres Harvested Each Year	4,300	4,300
Number of Local Jobs in Reforestation and Intensive Management ¹	38	38
Annual Local Payroll in Reforestation and Intensive Management (\$1,000,000) ²	\$0.3	\$0.3
Number of Local Jobs Produced in Other Business Sectors Because of Reforestation and Intensive Management on Lands Administered by the Roseburg District ¹	19	19
Annual Local Payroll Produced in Other Business Sectors Because of Reforestation and Intensive Management on Lands Administered by the Roseburg District (\$1,000,000) ²	\$ 0.1	\$ 0.1
Public Revenue to County Governments Attributable to the Harvest (\$1,000,000 in O&C Disbursements)	\$ 3.7	\$10.9
Number of Employees of County Government Whose Jobs Depend Upon Public Revenues from the Sale of BLM Timber Obtained from Lands Administered by the Roseburg District	73	214
Annual Payroll of County Government Employees Whose Jobs Depend Upon Public Revenue from the Sale of BLM Timber Obtained from Lands Administered by the Roseburg District (\$1,000,000) ²	\$0.8	\$2.2
Number of Local Jobs Produced in Other Business Sectors Because of County Employment Dependent on O&C Disbursements and the Jobs Created by Disbursements Passed Through to the Local Economy in the Form of Capital Construction or County Support of Local Programs	79	232
Annual Payrolls in Other Business Sectors Dependent on County Payrolls Created By Disbursements Passed Through to the Local Economy in the Form of Capital Construction or County Support of Local Programs (\$1,000,000) ²	\$0.9	\$2.5
Total Local Employment Effect of the Timber Management Program ¹	2,421	3,222
Local employment effect per MM bd. ft. of BLM timber harvested	12.9	17.2
Local earnings per MM bd. ft of BLM timber harvested	\$150,900	\$209,100
Total Local Payroll Effect of the Timber Management Program (\$1,000,000) ²	\$28.3	\$39.2

¹ All estimates refer to full-time employment, e.g., two jobs of 6-month duration equal one full-time equivalent.

² 1976 - 1978 dollars.

Table 2-26 Local Economic Effects of Fisheries, Terrestrial Wildlife and General Recreation

	Employment	Earnings ¹
Fisheries		
Direct	25	130,000
Indirect	10	76,000
Hunting		
Direct	15	64,000
Indirect	6	36,000
Other Recreation		
Direct	38	163,000
Indirect	15	99,000
Total	109	568,000

¹ 1976-1978 dollars

The seasonal variations in timber industry and the longer fluctuations in employment attributable to market conditions have produced a kind of dual work force in the industry consisting of a core of stable, senior workers and a peripheral group of workers who "float" in and out of the industry in response to the job situation or higher pay (Stevens 1978).

Herbicide use is a controversial issue having many vocal advocates and opponents. Advocates believe it is an inexpensive and safe means of increasing timber production by controlling competing vegetation when used with proper safeguards. Opponents believe further evidence is needed to prove that herbicide use is less expensive than other means. They also believe herbicide use may be damaging to the environment and harmful to human health.

Also controversial with some adjoining landowners and other residents are clearcutting and anticipated damage to watersheds from harvesting timber on steep slopes.

FIGURE 2-4

**Annual Average Lumber and Wood Products Employment
Douglas County, Oregon 1970-1980**

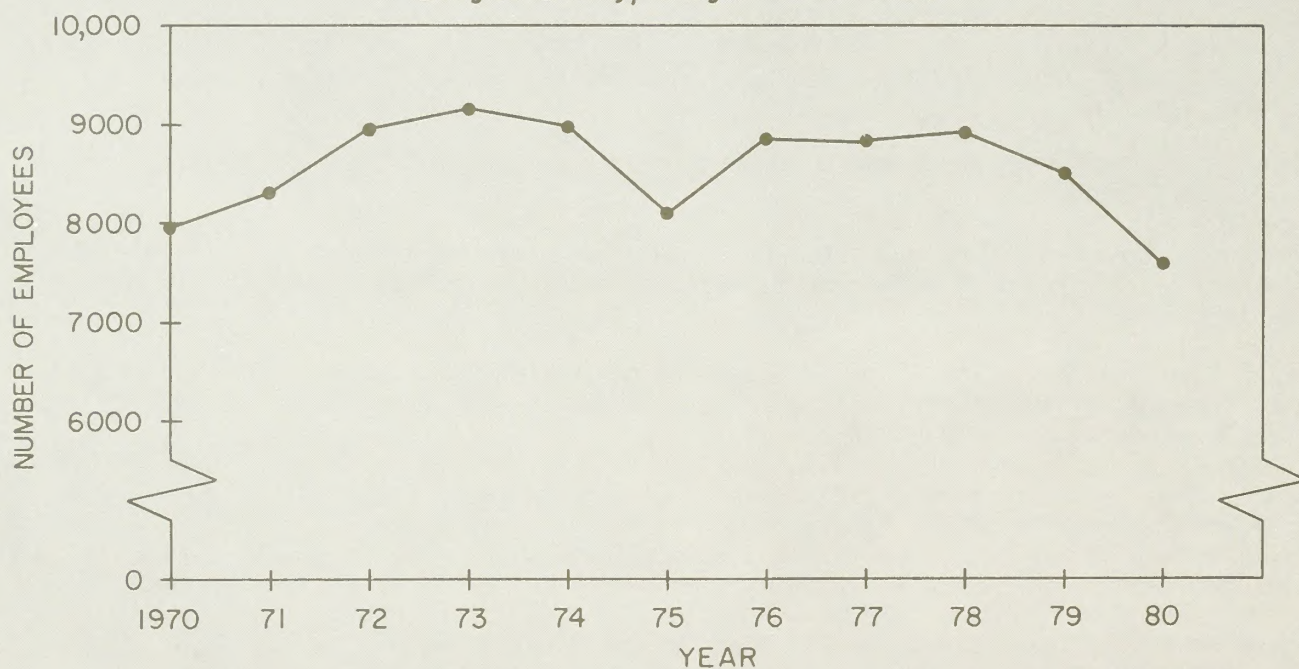


Table 2-27 Changes Desired by Survey Respondents in the Use of Federal Lands
(Percent distribution omitting undecided respondents)

Use	Oregon			Southern Oregon		
	More	No Change	Less	More	No Change	Less
Wildlife habitat	61	30	8	49	36	14
Hiking/Camping	52	38	8	40	46	12
Wilderness	44	38	16	32	28	39
ORVs/snowmobiles	13	24	60	19	33	44
Timber Production	41	38	19	60	26	13
Hunting/Fishing	51	40	7	53	42	4

Source: Tiff Harris, Public Perceptions of Federal Land Use Decisionmaking in Oregon: Results of a State-wide Survey, Oregon State University, August 1979

A recent statewide survey by Bardsley and Haslacher (Harris 1979) showed that residents of southern Oregon (including Douglas County) have different attitudes about the use of federal lands than do Oregonians in general. These survey results are shown in Table 2-27.

Local Employment and Personal Earnings Attributable to Resources Produced by BLM-Administered Land

In summary, the principal sources of local employment and personal earnings attributable to resources produced on BLM-administered land in the Roseburg District are:

Resource	Employment	Earnings
Timber	3,222	\$39,200,000
Commercial and Sport Fisheries	35	206,000
Hunting	21	100,000
Other Recreation	53	262,000
	3,331	\$39,768,000

Chapter 3 Environmental Consequences



Introduction

In this chapter, environmental consequences (impacts) are compared to the existing situation, as described in Chapter 2. Economic impacts are based on the existing situation plus projections of price and revenue levels under Alternative 5 (No Action). The significant impacts resulting from implementation of each of the alternatives are analyzed in relation to these baselines. A tabular comparison of composite impacts from each alternative is shown in Table 1-5. Analysis, including the scoping process, indicates that timber management would have no significant impacts upon climate, geology, topography, minerals, grazing, agriculture, utilities, communication sites and wilderness. Therefore, these topics are not discussed.

The major actions which cause impacts are timber harvest, road construction, site preparation (includes slash burning and herbicide use), plantation maintenance and release, plantation protection, precommercial thinning and fertilization. Significant effects to the local area and its economic base can also occur, depending upon which alternative and harvest volume levels are ultimately selected. These would include changes in employment, personal income and sharing of sale receipts with county governments, school districts and other local taxing entities.

In analyzing the impacts of the Original Proposed Action (Alternative 4), a sample 5-year (1984-1988) timber sale plan (available for review at the Roseburg District Office) was developed and used, where applicable, to assess potential site specific timber sale impacts. Although a 5-year plan is used for analysis purposes, actions identified are considered typical for the entire decade. Possible conflicts identified in this chapter for specific sales will be thoroughly addressed in detailed site specific environmental assessments. Timber management treatments not included in the timber sale plan (planting, vegetation control with herbicides, animal damage control, precommercial thinning and fertilization) are analyzed at the proposed 10-year levels. Site specific environmental assessments will be prepared when specific acreages are identified for each treatment. Analysis of the alternatives is based on the different levels of treatments shown in Table 1-2.

Two time frames are used in the analysis process. The short term is the first 10 years following the adoption of a new timber management plan. The long term is defined as beyond 10 years. Other time periods pertinent to specific impact discussions are used as necessary and identified in the text.

Analysis of long-term impacts for all alternatives is based on the assumption that the alternatives would be continued for many decades. In fact, the 10-year timber management plan and related land-use allocations selected after completion of the EIS will be subject to revision at the end of one decade.

A basic assumption of the analysis is that sufficient funding and personnel will be available for implementation of the final decision.

Impacts on Air Quality

During the construction of new roads and maintenance of older roads, fine particulate matter would be disturbed. This dust settles back to earth in relatively short distances, does not adversely impact anyone away from the construction sites and thus will not be considered further.

The major impact to air quality in the SYUs would be from slash burning. Estimated levels of burning activity by alternative are given in Table 1-2 (Site Preparation/Broadcast Burning).

Regardless of the alternative selected, all burning would be done in accordance with the Oregon Smoke Management Plan. Normally, smoke would be carried into upper air levels and away from populated areas. Occasionally, unforecasted weather changes could cause some smoke to return to surface areas, causing visible intrusions in nearby residential areas. When slash fires are allowed to burn or smolder overnight, the cooling nighttime temperatures bring residual smoke down

valleys, causing problems with visibility and increased particulates. The probability of intrusion would be highest under Alternative 1, due to more acres burned, and lowest under Alternative 8. Past experience indicates that visible intrusions may affect the population centers of Eugene-Springfield and Roseburg. Reported smoke intrusions from BLM Roseburg District slash burns affected the area from Roseburg to North Bend in 1980 (OSDF 1981). Between 1976 and 1981 Roseburg BLM was responsible for 18 of the 56 (32 percent) reported smoke intrusions in Douglas County. None of the intrusions during the above period led to a violation of primary air quality standards for total suspended particulates (Table 2-1).

Since 1980, there has been an effort to shift the prescribed fire workload from the traditional fall season to spring and early summer. It is estimated that 30 percent of the prescribed fire workload will occur in the spring and early summer. This is the season of best smoke dispersion opportunities. In the spring, larger fuels and the duff have fuel moistures too high to sustain fire. This results in less volume consumed and a corresponding reduced volume of smoke. Climatic conditions in the spring also increase the efficiencies of prescribed fire mop-up activities, resulting in less residual smoke. The trend in increasing wood utilization is also contributing to less volumes of slash occurring on harvested areas. These emission reduction techniques contribute to an estimated 35 percent decrease in volume of smoke produced per acre burned (Sandberg 1983). This data does not allow a statistically correct projection of expected problems over the next decade.

Airborne particles less than 1.0 micron in diameter make up 80 percent of smoke particulates. Particles of this size have very low fall velocities, about 5 cm/hour, and therefore will travel distances of approximately 100 miles. Particles of this size also scatter visible light (0.3 microns blue to 0.8 microns red), causing visibility problems.

Depending on the wind direction and speed following slash fires, visibility intrusions could occur in the Eugene-Springfield AQMA, the Roseburg AQMA, and in the following Class I areas: Kalmiopsis, Crater Lake, Mt. Washington, Three Sisters, Mt. Jefferson and Diamond Peak.

The wood component of slash is made up of about 50 percent carbon, 6 percent hydrogen, 43 percent oxygen and small amounts of nitrogen and other elements. When burning occurs, temperatures of 570° F to 2550° are maintained (Hall 1972) which produce carbon dioxide and water vapor. The whitish column of smoke observed from controlled slash fires is made up of over 90 percent water vapor and CO₂ (Table 3-1).

Table 3-1 Average Emission Components From Slash Burning (Tons/Decade)

	A L T E R N A T I V E								
	1 Max. Tbr.	2 Emp. Tbr.	3 Lo MHS	4 OPA	5 No Action	6 HD	7 No Herb.	8 Full Eco.	9 NPA
Tons of Slash Burned	182,308	167,654	161,487	157,105	120,922	115,472	108,269	54,369	155,826
Particulates ¹	3,828	3,521	3,391	3,299	2,539	2,425	2,274	1,142	3,273
Hydrocarbons ²	2,279	2,096	2,019	1,964	1,512	1,443	1,353	680	1,948
Carbon Monoxide ³	23,700	21,795	20,993	20,424	15,720	15,011	14,075	7,068	20,262
Sulfur Oxides ⁴	Negligible								
Nitrous Oxides ⁵	365	335	323	314	242	231	217	109	312
Water Vapor and Carbon Dioxide ⁶	90% of the Mass of Combustion Products								

¹ Particulates are near 0.1 micrometer in diameter. Average emission of 17-67 pounds/ton slash burned.

² Hydrocarbons are a diverse class of compounds containing hydrogen, carbon and oxygen.

³ Carbon monoxide (CO) is very short lived in the natural environment and quickly dilutes and also converts to CO₂.

⁴ Sulfur oxides (SO_x) are produced in small quantities, since most forest residues contain less than 0.2 percent sulfur.

⁵ Nitrogen oxides (NO_x) are found in some very hot fires, but this is generally not a problem in prescribed burns. The temperature required to fix atmospheric nitrogen is over 2800°F and such a temperature is not frequently attained in slash burns.

⁶ Carbon Dioxide (CO₂) is not an air pollutant in the usual sense. About 1 ton of burned fuel produces 1 to 1-1/2 tons of CO₂ (Ryan et al. 1976, cited in Sandberg et al. 1978).

Source: J. Alfred Hall 1972 and Sandberg et al. 1978

The contaminants most frequently found in slash smoke are carbon dioxide (CO₂), carbon monoxide (CO), nitrogen oxides (NO_x), hydrocarbons (HC) and respirable fine particulates (Sandberg et al. 1978).

Conclusions

The major impact to air quality would be visible smoke from slash burning. Although occasional smoke intrusions are likely, none are expected to violate primary air quality standards for total suspended particulates.

Impacts on Soils

The major impacts of timber management on soils are compaction, landsliding, topsoil erosion and depletion of organic matter, nitrogen and other nutrients. Each results in a loss of soil productivity (see Glossary). Timber management activities that are the causal agents include road, fire trail and landing construction; yarding logs; scarification and slash burning. The amount of landslides and surface erosion is influenced by the steepness of slopes, soil properties, amount of disturbance and remaining litter cover, and the amount and intensity of precipitation (Pritchett 1979).

Standard design features would be employed to minimize adverse impacts on soils. Compacted soils from tractor logging in clearcut units would be ripped or tilled to partially restore productivity. Loss of productivity due to compaction from tractor logging in partial cut units cannot be mitigated during the rest of the rotation. Partial and total suspension yarding systems would be used to minimize soil disturbance. New roads would be located away from streams and on

ridgetops and designed to avoid undercutting or overloading unstable slopes. Excess road material on unstable and potentially unstable slopes would be end-hauled to reduce landsliding. Scarification would be done during dry soil conditions without piling soil. Slash burning and scarification would be minimized on thin, droughty or nitrogen-deficient soils.

Table 3-2 shows estimated acres upon which soil productivity would be lost as a result of timber management under the proposed action and alternatives during the first decade.

Soil compaction results primarily from the weight and shearing forces involved in dragging logs and operating ground-based logging equipment. Compaction hinders root penetration and water percolation and availability, reducing vegetation growth. Decreases in root penetration of 35 to 65 percent can reduce the vegetative productivity of soils by 10 to 25 percent (Power 1981a). In the Roseburg SYUs, tractor logging has been found to reduce soil productivity for the entire cutting unit by 11.8 percent due to compaction (Wert and Thomas 1981). Yarding systems using ground-based equipment have a greater adverse impact on soils than cable systems which drag the logs. One end suspension has a lesser impact than systems providing no suspension. Systems using total suspension have the least impact on soils. Compaction and reduced infiltration capacity have been found to last at least 55 years (Power 1974, cited in Fredriksen and Harr 1979) and therefore may last longer than harvest rotation periods.

Site scarification and slash piling by tractors with brush rakes compacts soils and displaces topsoil. This practice can be expected to reduce soil

Table 3-2 Estimated Loss of Productivity During First Decade (acres)¹

Process	Alt. 1 Max. Tbr.	Alt. 2 Emp. Tbr.	Alt. 3 Lo MHS	Alt. 4 OPA	Alt. 5 No Action	Alt. 6 HD	Alt. 7 No Herb.	Alt. 8 Full Eco.	Alt. 9 NPA
Road Construction ²	5,568	5,124	4,932	4,800	3,696	3,528	3,306	1,662	4,780
Yarding Systems (Compaction) ³	3,551	3,267	3,135	3,057	3,132	2,250	2,131	980	3,056
Landsliding from Fragile Soils	17	16	15	15	11	10	10	5	15
Dry Ravelling	Acreage data unavailable								
Nutrient Depletion	Acreage data unavailable (see Table 3-3)								
Totals	9,136	8,407	8,082	7,872	6,839	5,788	5,447	2,647	7,851

¹ Productivity loss of commercial timber resulting from road construction and landslides is long term. Loss from compaction has been estimated to last up to 55 years on some soils.

² From Table 1-2.

³ These are equivalent net acres (acres compacted x percent loss of productivity due to compaction) assuming amelioration by ripping.

productivity by 11 to 22 percent (Clutter and Dell 1978). One study in the Salem District showed a reduction of 17 percent in productivity after scarification (Power 1981b). Topsoil is also removed by dragging logs and by constructing fire trails, roads and landings with heavy equipment. On clearcuts yarded by tractors, predesignated skid roads will be used so that less than 10 percent of the surface area will be traversed.

On very steep slopes with decomposing granitic bedrock, clearcutting increases the number and magnitude of debris avalanches and torrents. This increase is caused by decay of small tree roots, log gouges from yarding, plugged road culverts and road construction and usually occurs 1 to 3 years after harvesting (Hughes and Edwards 1978). The 5-year timber sale plan shows 825 acres of soils from granitics would be subjected to timber harvest.

Erosion from landslides in Tyee sandstone, as measured in the Mapleton Ranger District (Swanson, Swanson and Woods 1977), increases 123 times above the undisturbed forest rate following clearcutting and roadbuilding. Approximately 4,600 acres of these soils, identified as fragile, would be harvested as shown in the sample 5-year timber sale plan.

Estimates of acres of soil lost due to landsliding are given in Table 3-2. The size of potential landslides ranges from 20 to 250 feet wide and 200 to 6,000 feet long. Material from such slope failures usually scour stream channels to bedrock, ending in debris dams.

Dry ravelling in disturbed areas takes place throughout the year in the SYUs and results in loss of topsoil and decreased soil depth. When vegetation and duff are removed by yarding logs, slash burning or other practices, surface soil is free to move and ravelling is accelerated. On steep, south-facing slopes ravelling may continue for 20 to 30 years after disturbance or until vegetation becomes reestablished.

Nitrogen (N) in forest soils is largely in the humus layer. Amounts of 2 to 10 tons per acre can be found in deep silt loams under old growth Douglas-fir (Heilman 1981). Much of this N in the slash and litter is volatilized during slash burning and is lost. Total loss of N from clearcutting and slash burning can reach as high as 9 percent of available N (Hornbeck et al. 1974, in Sopper 1975), but more likely will be about 4 percent (Grier 1982). Losses of phosphorus (P) are similar to

Table 3-3 Expected Nutrient Losses (Tons) from Timber Harvesting and Slash Burning (10-Year Plan)

Alternative	N	P	K	Ca
1 (Max. Tbr.)	3,076	3,691	344	850
2 (Emp. Tbr.)	2,829	3,394	316	782
3 (Lo MHS)	2,725	3,269	305	753
4 (OPA)	2,651	3,181	296	733
5 (No Action)	2,040	2,448	228	564
6 (HD)	1,949	2,338	218	538
7 (No Herb.)	1,827	2,192	204	505
8 (Full Eco.)	917	1,101	103	254
9 (NPA)	2,640	3,170	295	731

Source: Based on analysis of a 35-year-old, second growth Douglas-fir ecosystem.

losses of N. Losses of nutrients calcium (Ca) and potassium (K) are a little less than N and P (Fredriksen 1972; Grier, personal communication). These nutrients are attached to organic detritus and soil particles and are lost as the soil erodes. Assuming a 4 percent loss of N and P, and a 3 percent loss of Ca and K following clearcutting and burning (site preparation), each alternative would result in losses shown in Table 3-3.

Conclusions

Impacts to soil and soil productivity are mainly due to road construction, landslides, and compaction. Alternative 1 has the greatest impacts on long- and short-term soil productivity while Alternative 8 has the least. Acres lost from production range from 2,647 under Alternative 8 to 9,136 under Alternative 1. Less significant impacts include nutrient losses, dry ravelling, and topsoil removal.

Impacts on Water Resources

Forest management activities which would impact water resources include road building, timber harvest, slash burning and application of fertilizers and herbicides. These activities can affect water yields, seasonal streamflow characteristics (peaks and low flows) and instream water quality (sedimentation, temperature, dissolved oxygen, nutrients and organic substances). The significance of each impact would depend upon the amount of timber harvested in each watershed, the proximity of the activities to streams and the site specific application of mitigating measures.

Water Quantity

Forest harvest activities would have very little effect on the streamflow of larger rivers draining the SYUs. Table 3-4 shows estimates of annual water yield from public lands in the SYUs for each alternative, compared to the existing yield and undisturbed watershed.

Although the effect of timber harvest on streamflow in the larger rivers would be small, local increases in water yield would occur in clearcut areas. Removing forest vegetation reduces evapo-transpiration (see Glossary), thereby increasing the amount of rainfall available for streamflow. Studies of clearcutting small watersheds in western Oregon showed that water yields from clearcut areas increased 26 to 43 percent following harvest (Harris 1977; Rothacher 1970; Harr et al. 1979). Based on Rothacher's (1970) study of clearcutting in the central Oregon Cascades, water yield from clearcut areas in the SYUs is expected to increase 35 percent. The duration of increased water yields is not easily predicted; however, varying degrees of altered yields may last up to 35 years (Kovner 1956, cited

Table 3-4 Estimated Annual Water Yield From BLM-Administered Land, End of First Decade

Situation	Annual Water Yield (acre-feet)	Percent Change From Existing	Percent Change From Undisturbed
Past Decade	863,000	0	4.4
Alt. 1 (Max. Tbr.)	879,000	1.8	6.3
Alt. 2 (Emp. Tbr.)	875,000	1.3	5.8
Alt. 3 (Lo MHS)	873,000	1.1	5.6
Alt. 4 (OPA)	872,000	1.0	5.4
Alt. 5 (No Action)	864,000	0.1	4.6
Alt. 6 (HD)	860,000	-0.4	4.0
Alt. 7 (No Herb.)	858,000	-0.6	3.8
Alt. 8 (Full Eco.)	841,000	-2.5	1.8
Alt. 9 (NPA)	871,000	0.9	5.3

Source: Based on analysis of a 35-year-old, second growth Douglas-fir ecosystem.

in Harr et al. 1979). Compacted soils and roads which increase surface water runoff are permanent sources of water yield increases.

In addition to altering total annual water yields, timber harvest would affect the timing and magnitude of seasonal streamflows in small watersheds in the SYUs. Rothacher's (1970, 1973) study of small watersheds near the SYUs showed fall and spring peak flows were increased by logging, although extreme winter peaks were relatively unaffected. A recent analysis (Christener 1981) suggests that extreme winter peaks may also be increased by timber harvest if the peaks occur from heavy rainfall on an existing snowpack. Summer low flow levels would also be increased by timber harvest. Studies of other small watersheds in the central Oregon Cascades (Rothacher 1971) suggest minimum flows for small watersheds in the SYUs would increase up to 300 percent. Although relative changes in minimum flows may be large (200 to 300 percent), absolute changes would be small, due to naturally low levels of streamflow during the summer months (ibid.). Increases in peaks and low flows would be greatest in small watersheds sustaining the greatest increases in clearcut acreages during the next decade.

Water Quality

Timber harvesting, road building and slash burning would increase sediment discharge from affected small watersheds in the SYUs. Fredriksen and Harr (1979) reported that logging in the central Oregon Cascades increased suspended sediment yield 23 times the natural rate (undisturbed condition) in a patch cut watershed with roads, and nine times the natural rate in a clearcut watershed without roads. Hughes and Edwards (1978) reported that sluice-outs from intermittent streams in clearcuts were eight times as large (on a per acre basis) as from intermittent streams in undisturbed watersheds, and most (85

percent) resulted from headwall failure. These sluice-outs originated in granitic soils (Holland-Siskiyou series) during storms of 5 to 12 year return periods (see Impacts on Soils). Clearcut acres produced about 530 tons/acre of sediment from landslides in granitic soils. Similar increases in sediment yield can be expected in small watersheds within the SYUs where mass soil movement (debris avalanching) is the dominant erosion process (see Impacts on Soils). In undisturbed watersheds, streams are usually capable of transporting more sediment than is delivered to them (Rice et al. 1979). During and following timber harvest, road construction and slash burning, sediment and debris would be delivered to drainage systems. Sediment discharge would then no longer be determined by the availability of sediments, but by the transporting ability of streams. Increased water yields (Table 3-4) would also increase the ability of streams to transport sediments. Where stream energy is insufficient to transport all the sediment, deposition would occur.

Surface vegetation left undisturbed in areas bordering streams can act as a filter and retain soil particles eroded from the surface of disturbed areas, thereby reducing suspended sediments in streams. The effectiveness of sediment buffers is dependent upon slope, type and density of vegetation and buffer width. When water temperature is not a concern and careful planning is used in partial cutting of buffers (falling timber away from streams, no tractor harvest and no burning), the removal of merchantable timber may not adversely affect the sediment trapping ability of the buffer (Froehlich 1982). Buffers would protect third order and larger streams in Alternatives 2 through 7 and 9, and protect all streams in Alternative 8. In Alternative 1 no harvest restrictions are planned for stream buffers except as provided by the Oregon Forest Practices Act. When buffers are left on third order and larger streams, only sediment produced from first and second order streams will enter at the headwaters and be carried down the drainage system whenever stream energy is sufficient for transport.

Sediment yield from surface erosion and runoff was estimated by examining the number of acres of buffers harvested in each alternative and is displayed in Table 3-5. The percent of the buffers to be cut was used to estimate sediment yield (Table 3-6) and altered water temperatures.

Estimates of total sediment yield are presented in Table 3-6.

Table 3-5 Estimated Sediment Yield Through Buffer Strips (For First Decade)

Alternative	Acres of Proposed Buffers to be Harvested		Tons of Sediment From Sheet Erosion
	Clearcut	Partial cut	
1 (Max. Tbr.)	N/A ¹	N/A ¹	303,000
2 (Emp. Tbr.)	127	1,018	176,800
3 (Lo MHS)	121	981	153,800
4 (OPA)	120	960	148,900
5 (No Action)	40	310	164,600
6 (HD)	0	0	0
7 (No Herb.)	8	660	102,900
8 (Full Eco.)	0	0	0
9 (NPA)	0	0	0

¹ No harvest restrictions are planned.

The chemical quality of surface water would be affected by slash disposal. In one Oregon Cascades watershed studied by Fredriksen (1971), instream concentrations of ammonia-nitrogen and manganese reached peak levels of 7.6 and 0.44 parts per million (ppm), respectively, when runoff from rainfall that extinguished the burn entered the stream. In the SYUs, only Alternative 8 would provide adequate protection for streams. Ammonia-nitrogen and manganese concentrations could exceed recommended water quality standards (0.02 ppm for free ammonia-nitrogen, 0.05 for manganese) in some first and second order streams for several days following slash burning. However, water from these streams would quickly be diluted upon entering third order or larger streams, resulting in a slight, short-term impact.

Due to insignificant surface runoff in areas to be fertilized, substantial increases in nutrient concentrations following forest fertilization are not expected in the SYUs. Pelleted urea dissolves slowly and is utilized by vegetation before it can be translocated.

Timber harvest affects stream temperatures by removing shading vegetation from streambanks. Stream temperature increases of 10 °F or more have been recorded following removal of streamside vegetation by clearcutting and burning in both the Oregon Cascades and Coast Range (Brown and Krygier 1970; Levno and Rothacher 1969). Alternative 8 provides temperature maintenance for first order and larger streams. Under Alternative 1, removal of merchantable timber (see Table 3-5) would reduce the effectiveness of buffers to provide adequate shade, resulting in increased temperatures. Downstream shading does not significantly lower temperatures of streams warmed by upstream exposure (Brown et al. 1971).

Table 3-6 Estimated Sediment Yield From BLM-Administered Land, First Decade (Tons/Decade)

Alternative	From Landslides	From Sheet Erosion	From Roads	Total
1 (Max. Tbr.)	84,100	303,000	104,400	491,500
2 (Emp. Tbr.)	77,300	176,800	61,000	315,100
3 (Lo MHS)	74,500	153,800	53,000	281,300
4 (OPA)	72,500	148,900	51,400	272,800
5 (No Action)	55,800	164,600	56,800	277,200
6 (HD)	53,300	0	46,000	99,300
7 (No Herb.)	49,900	102,900	35,500	188,300
8 (Full Eco.)	25,100	0	17,800	42,900
9 (NPA)	72,300	0	51,200	123,500

Harvest activities may reduce instream concentrations of dissolved oxygen by adding debris to streams. Fine organic debris (such as small twigs and needles) uses dissolved oxygen during decomposition. This depletes dissolved oxygen concentrations at times of high stream temperatures, low streamflows and low available oxygen. Since instream oxygen concentrations quickly return to normal following stream cleanout and fall rains (Hall and Lantz 1969), low instream oxygen concentrations would only be local and temporary in the SYUs. However, oxygen concentrations in stream gravel may continue to decline for several years after logging, because waterflow through gravels is restricted by sedimentation (Hall and Lantz 1969). For this reason, impacts on intragravel oxygen in the SYUs would be directly related to the changes in sediment yield discussed above.

The effects of herbicide application on water quality have been described elsewhere (USDI, BLM 1978). Design elements (see Chapter 1) such as buffer strips are expected to minimize herbicide drift or accidental direct spraying of water bodies. Amounts of herbicide reaching streams beyond these barriers would be insignificant and would not adversely affect water quality. Movement of herbicides through the soil (leaching) is usually measured in terms of inches or a few feet (Norris 1975). This is a slow process that would not lead to stream contamination, because the herbicide would degrade before reaching free water (ibid.). For additional discussion, see Chapter 3, Impacts on Animals and Impacts on Human Health.

Municipal Watersheds

The cities of Riddle, Canyonville and Drain have signed Memoranda of Understanding (MOU) which outline practices to be utilized in the municipal watersheds. The sample 5-year timber sale plan water yield (see discussion of altered water yields, this section) and increased sedimentation. Although an increase in water yield

may be beneficial, the increase in suspended solids would result in increased filtration costs.

Conclusions

Timber harvest would have very little effect on water yield in the larger rivers and streams. Sedimentation is expected to be greatest under Alternative 1 and least under Alternative 8. Increased stream temperatures can be expected in Alternative 1. There would be 469 acres harvested in municipal watersheds in 5 years. Overall impacts are greatest in Alternative 1 and least in Alternative 8.

Impacts on Vegetation

This section describes the impacts of implementing a timber management plan on vegetation. All impacts to wetland and aquatic vegetation 3-7 shows the are expected to be insignificant potential activity in those watersheds.

Table 3-7 Proposed Activities in Municipal Watersheds Based on the Sample Five-Year Timber Sale Plan

Municipal Watershed	Sale Year	Acres to be Harvested*
City of Canyonville	1985	118
City of Drain	1985	160
City of Riddle	1987	133
City of Riddle	1988	58

* Similar harvests have occurred in each of these watersheds over the past decade.

The impacts of timber harvesting on municipal watersheds would be increased for all alternatives except 1. Under Alternative 1, wetlands would be significantly impacted by harvesting operations. Aquatic vegetation would be protected only to the degree afforded streams under the Oregon Forest Practices Act. This would be inconsistent with Executive Orders 11988 and 11990.

Terrestrial Vegetation

Management treatments applied under each alternative would impact the existing vegetation in direct relation to the level of treatment shown in Table 1-2. Impacts to riparian habitat are expected to be insignificant under Alternatives 6, 8 and 9 (over 18,300 acres protected). However, under Alternative 1, riparian habitat would be included in adjacent areas scheduled for final harvest and subsequent management treatments. Under Alternatives 2, 3, 4 and 7, the modified area control concept would provide for harvest in riparian areas (along third order and larger streams) by individual tree selection, shelterwood or clearcut methods. Alternative 5 would provide protection for 8,070 acres along third order and larger streams. Areas adjacent to first and second order streams would be harvested under all alternatives except 8 (see Table C-4). The resulting impact would be alteration of the riparian habitat in and around those areas where harvesting operations would occur. The degree of impact would range from removal of the old growth component where individual trees are removed to severe alterations where clearcutting occurs.

Timber harvesting initiates plant succession by creating openings in the forest canopy similar to

those created by natural disturbances. Different cutting practices (i.e., clearcutting and single tree selection methods) open the canopy to varying degrees, thereby influencing the plant composition and duration of the plant communities.

Clearcutting completely removes the forest canopy, thereby allowing the establishment of the first successional stage (grass/forb). Openings in the canopy created by commercial thinning, and to a lesser extent mortality salvage, could result in insignificant growth increases of understory vegetation.

Vegetation composition in the SYUs would change according to the level of harvest proposed under each alternative. When compared to the existing forest profile, this change is notable by a shift of acreage from one age class to another (i.e., old growth to non-stocked or 0-7 year age group). This acreage shift is best shown by a percent change in individual age class stratification as shown in Table 3-8. Long-term effects (first, second, fifth and tenth decades) were projected and are displayed in Appendices E and F.

The full scope of potential benefits that might accrue from old growth retention is yet unknown. Maintaining a representative structural component of old growth Douglas-fir across a range of environmental variables until these processes are better understood may be essential to maintaining the long-term productivity of timber stands.

Yarding practices to be employed during the 10-year period consist of ground or partial suspension cable systems, cable with full suspension and tractor systems. Each system

Table 3-8 Approximate Acres of BLM-Administered Timber Lands and Percent of Change after One Decade

Habitat Age	Current Acres	Alt. 1 Max. Tbr.	Alt. 2 Emp. Tbr.	Alt. 3 Lo MHS	Alt. 4 OPA	Alt. 5 No Action	Alt. 6 HD	Alt. 7 No Herb.	Alt. 8 Full Eco.	Alt. 9 NPA
Grass/Forb Non-stocked and 0-7 Years	34,143	54,957 +61%	50,359 +47%	48,293 +41%	46,930 37%	29,164 -15%	34,066 <-1%	32,163 -6%	15,212 -55%	46,741 +37%
Brush/Seedling 8-15 Years	40,853	42,399 +4%	41,636 +2%	41,446 +1%	41,205 +1%	42,621 +4%	39,204 -4%	38,773 -5%	36,421 -11%	41,100 +1%
Pole/Sapling 16-45 Years	56,393	91,329 +62%	91,329 +62%	91,329 +62%	91,329 +62%	114,097 +102%	91,329 +62%	91,329 +62%	91,329 +62%	91,329 +62%
Young 2nd Growth 46-115 Years	82,176	71,010 -14%	71,033 -14%	71,048 -14%	71,054 -14%	89,141 8%	71,126 -13%	71,120 -13%	70,538 -14%	71,052 -14%
Mature 116-195 Years	79,807	74,503 -7%	75,736 -5%	76,242 -4%	76,614 -4%	89,885 +13%	79,645 <-1%	80,418 1%	85,171 +7%	76,291 -4%
Old Growth 196+ Years	110,864	66,527 -40%	70,640 -36%	72,378 -35%	73,604 -34%	34,996 -68%	85,751 -23%	87,623 -21%	103,196 -7%	74,378 -33%

These columns may not have the same total acres due to the differences in the land use allocations of each alternative. This is especially true for Alternative 5, which also utilizes the 1972 land base and inventory.

Source: BLM allowable cut printout and district inventory.

impacts ground vegetation to different degrees relative to the soil disturbance resulting from the harvest system used.

Broadcast burning is the one method of slash disposal proposed under each alternative. The short- and long-term effects of burning are relative to the severity of the burn. According to research in the Coast Range of western Oregon (Morris 1970), 5.8 percent of the total area burned was severely burned. While 16.6 percent of the area remained unburned, 22.2 percent and 55.4 percent received moderate and light burns, respectively. The lighter burn provides a greater percent of herbaceous and brush cover within the first 2 years after burning. Scheduled replanting of coniferous seedlings in the area would contribute to the alteration as a fire-induced plant community became established. The study also showed that natural restocking of coniferous species was approximately 30 percent greater on burned, as compared to unburned, sites in the first 4 years.

Coniferous seedlings raised in nurseries would be planted (Table 1-2). Under the best possible site conditions, rapid natural regeneration could occur every 3 to 7 years, depending on seed crops. Under artificial regeneration, seedlings are generally planted the first year following harvest. Because the planting stock is already two or more years old, it can have a competitive advantage on good sites and an even greater advantage on poorer sites. Therefore, planting shortens the amount of time required for succession to progress beyond the grass/forb and shrub/seedling stages. The major long-term impact associated with planting is that, by increasing the competitive advantage of Douglas-fir, early successional stages are more quickly passed through, and Douglas-fir attains site dominance more rapidly. This acceleration not only reduces the residence time of early successional stages but also precludes the development of maximum plant diversity. Planting an estimated 15,200 acres with genetically improved trees during the 10-year period would not have a significant effect on the natural gene pool in either the short or long term. No significant adverse long-term impacts are anticipated with the eventual planting of genetically improved trees on 90 percent of the intensive timber production base for each alternative. Maintaining a broad selection of parent trees would ensure variability in genetic base populations. The artificial regeneration program on BLM-administered lands is not expected to significantly affect the stand or species composition of the entire Roseburg Area. (BLM administers 29 percent of the total forested lands. Compare Appendices E and F.)

Herbicides are used to manipulate the species composition, size, density, vigor and presence of vegetation. Plant habitat altered by herbicides would increase over that in the past decade in all

alternatives except 7 and 8. Applications are targeted to control grass and broadleaf species to provide a competitive advantage for conifers. Because different herbicides work best for selected target species, herbicides are often used in combinations. In forestry applications, the desired effect is acceleration of plant succession from early successional stages to later stages dominated by conifers. Gratkowski and Lauterback (1974) reported on the height growth of young Douglas-fir for a 5-year period after release. Percentage increase in height growth over non-released trees varied from 130 percent (for trees one foot high when spraying occurred) to 149 percent (for trees six feet high) for basal spray plots and from 255 percent (for trees one foot high) to 171 percent (for trees six feet high) for aerial spray locations.

Non-target vegetation immediately adjacent to spray units may be affected by the movement of herbicides through the air. Such impacts are limited, but not eliminated entirely, by buffer strips and by application techniques (Gratkowski 1974). Although the direct vegetational impacts of herbicide application are short term, the effects of accelerating the establishment of conifer stands are long term. Once the coniferous stands become dominant they remain until the trees are harvested or until natural disasters remove them. For greater detail on herbicides and the provisions for monitoring of herbicide application, see the FEIS Vegetation Management with Herbicides: Western Oregon - 1978 through 1987 (USDI, BLM 1978).

Some timber stands would be fertilized under all alternatives except 5, 7 and 8. This practice would result in immediate increases of nutrient availability for all vegetation on the site. However, resultant increased vigor and growth are directed at commercial conifer species. These are short-term impacts lasting for an average of 7 years, depending on site quality.

Sensitive, Threatened or Endangered Plants

Unidentified populations of sensitive, threatened or endangered plant species could be susceptible to any impacts described under terrestrial vegetation. The direct effects of injury or death to the plants could cause the immediate elimination of a species in all or a significant portion of its range. The more subtle effects of vegetative community changes could cause the eventual elimination of a species locally through loss of competitive ability relative to other vegetation on the site.

If any species of vascular plant is determined by the U.S. Fish and Wildlife Service to be threatened or endangered, any action that contributes to its extinction or to its threatened or endangered status would be in violation of the Endangered

Species Act of 1973 as amended. Therefore, environmental analysis accomplished prior to any site specific action would include any threatened or endangered plant species known to be present on the site and appropriate measures to be taken.

Conclusions

Alterations to plant community structure and longevity would be the most significant impacts to terrestrial vegetation on those lands included in the timber production base. Continued timber management would not allow natural succession to replace these communities because future forests would be harvested before they reached the 90-year age class.

Ecosystem management assumes that every component of a naturally functioning system serves a purpose and that each component benefits the system. At the present time, there is no definitive description of the functioning of the old growth system and its importance to long-range timber production.

The symbiotic relationships between plants and animals that function in old growth stands are not fully understood and may prove to be important to long-term timber production. Until this is understood, maintaining a representative range of the old growth forest and associated floral and faunal genotypes is important. All alternatives would to provide an adequate representation of the original old growth systems over the short term.

The short-term use of the commercial forest lands for timber harvest would increase the long-term production of wood fiber as old, slow-growing stands are replaced by young, fast-growing stands managed for optimum wood production. In the long term, as the area approaches a balance of age classes, maximum growth of commercial coniferous species is achieved.

Changes in plant communities and habitat could eliminate some plant species over the long term. Intensive timber management practices such as planting and herbicide application would favor survival of coniferous trees. However, elimination of hardwood trees, shrubs and herbaceous vegetation would not occur.

An additional type of impact involves the management option of using a lower minimum harvest size (MHS). A significant trade off between short-term use and long-term productivity exists. Alternative 3 differs from 4 in that it utilizes a lower MHS (see Chapter 1). Over the short term (the first 10 years), Alternative 3 would allow harvest of 70 MM bd. ft. (7 MM bd. ft./year) above that of Alternative 4. However, over the long term, total productivity would be less. Maximum growth and yield are attained when a regulated forest is achieved, producing an estimated annual harvest

of 303 MM bd. ft. on the timber production base of Alternative 4. Alternative 3 would have an annual harvest higher than Alternative 4 until approximately the 13th decade, when Alternative 4 achieves regulation. During this time, a total harvest of 910 MM bd. ft. above the Alternative 4 level would be realized. Beginning in the 13th decade, Alternative 4 would produce the higher annual harvest (303 MM bd. ft. at the regulation level) until Alternative 3 achieves regulation in approximately the 30th decade. During those 17 decades, Alternative 4 would produce an additional 7,990 MM bd. ft. for harvest. Therefore, over the long term (at least 30 decades into the future), Alternative 4 would produce 7,080 MM bd. ft. more than Alternative 3. A similar relationship would exist for all alternatives which utilize a 50 year minimum harvest age.

Existing older forest communities scheduled for final harvest would be converted to early successional stage communities. This impact is unavoidable. Table 3-9 indicates the amount of old growth habitat that would be irretrievably lost as long as those acres are managed intensively for timber production under all Alternatives except 8. Permanent new road construction ranging from 1,662 acres in Alternative 8 to 5,568 acres under Alternative 1 would result in the unavoidable elimination of vegetation on these acres.

Impacts on Animals

Timber operations impact both animals and their habitats. In most cases, the greatest and longest-term impacts occur on animal habitats, rather than on individual animals. Thomas (1979), Meslow (1977) and Wight (1974) have shown that certain species of vertebrates are associated with forests that are of a particular age class and resulting structure. Some species habitat requirements are rigid, others are more flexible. Appendix D lists species occurring in the SYUs and their association with various habitats.

The predicted structure of habitat on BLM-administered forest lands (Appendix E) was calculated using the allowable cut runs and district inventory data. In an attempt to place BLM plans in perspective, the predicted structure of habitat in the entire EIS area (as defined in Chapter 2, Animals) was also estimated by applying extremely rough projections of harvest levels (by ownership) on all these lands over the first 10 decades (see Appendix F).

Terrestrial Vertebrates Transportation System

Road construction would eliminate vegetation from the roadbed. The acreage would vary (see Table 1-2) depending on the alternative selected. Currently about 12,000 acres have been cleared for roads. The added impacts of habitat elimination would be adverse and perpetual since most road

Table 3-9 Acres of Old Growth* (196+) and Percent Change from Existing on BLM-Administered Lands Remaining at the End of Each Decade (Current: 110,900 acres)

Decade	Alt. 1 Max. Tbr.	Alt. 2 Emp. Tbr.	Alt. 3 Lo MHS
1	66,500 (-40%)	70,600 (-36%)	72,400 (-35%)
2	28,700 (-74%)	36,300 (-67%)	40,900 (-43%)
3	8,600 (-92%)	16,600 (-85%)	28,400 (-74%)
4	8,700 (-92%)	16,400 (-85%)	27,800 (-75%)
5	8,900 (-92%)	16,600 (-85%)	27,900 (-75%)
6	9,000 (-92%)	16,100 (-85%)	26,800 (-76%)
7	9,000 (-92%)	15,700 (-86%)	25,800 (-77%)
8	13,500 (-88%)	20,500 (-82%)	31,300 (-72%)
9	13,600 (-88%)	21,000 (-81%)	31,800 (-71%)
10	13,700 (-88%)	21,100 (-81%)	31,800 (-71%)

Decade	Alt. 4 OPA	Alt. 5 No Action	Alt. 6 HD
1	73,600 (-34%)	35,000 (-68%)	85,800 (-23%)
2	42,400 (-62%)	13,000 (-88%)	66,500 (-40%)
3	28,400 (-74%)	4,800 (-96%)	59,300 (-47%)
4	27,800 (-75%)	5,000 (-95%)	57,800 (-48%)
5	27,900 (-75%)	5,400 (-95%)	58,200 (-48%)
6	26,800 (-76%)	5,500 (-95%)	55,800 (-50%)
7	25,800 (-77%)	5,600 (-95%)	54,600 (-51%)
8	31,300 (-72%)	6,300 (-94%)	62,700 (-43%)
9	31,800 (-71%)	6,800 (-94%)	66,100 (-40%)
10	31,800 (-71%)	7,300 (-93%)	68,100 (-39%)

Decade	Alt. 7 No Herb.	Alt. 8 Full Eco.	Alt. 9 NPA
1	87,600 (-21%)	103,200 (-7%)	74,400 (-33%)
2	71,400 (-36%)	106,100 (-4%)	42,800 (-61%)
3	53,600 (-52%)	105,000 (-5%)	31,000 (-72%)
4	53,900 (-51%)	103,600 (-7%)	31,000 (-72%)
5	56,200 (-49%)	106,000 (-4%)	31,800 (-71%)
6	55,800 (-50%)	102,400 (-8%)	31,300 (-72%)
7	55,400 (-50%)	101,100 (-9%)	30,800 (-72%)
8	63,700 (-43%)	113,500 (+2%)	37,000 (-67%)
9	67,500 (-39%)	119,500 (+8%)	38,200 (-66%)
10	70,000 (-37%)	123,500 (+11%)	38,900 (-65%)

* Rounded to nearest 100 acres

Source: BLM allowable cut printout and district inventory.

systems would be maintained indefinitely. Increased mortality due to collisions with vehicles is unpredictable but probably insignificant.

Harassment of wildlife by vehicles undoubtedly would occur and during stress situations, such as times of temperature extremes, would adversely affect the animal's physiological mechanisms and mortality could occur. Losses to this cause would not be expected to be large or significant to the population as a whole. New miles of roads mean more access by hunters and increased harvest and

harassment is probable. Legal harvest can be limited by regulations adopted by the Oregon Fish and Wildlife Commission but an increase in poaching is probable. This could lead to depressed deer and elk populations in local areas.

Lyon (1979) and Perry and Overly (1977) have shown that elk use is reduced within one-half mile of roads traversing elk habitat. This reduced use varies with terrain, cover, distance and other factors, so an accurate quantification is possible only on a site specific basis. However, the

probable effects of a mile of road through elk habitat can be described in general terms. Vehicular use of a road will affect elk use of the adjacent habitat. This influence on use may extend for at least 660 feet on either side of the road, thus affecting an area of 160 acres per mile of road. It is estimated that elk use of this 160 acres may be as much as 75 percent less than that of similar habitat not influenced by road use. Such a reduction in habitat use must be considered adverse. Effects of roads on deer are "variable and relatively insignificant" (Perry and Overly 1977, page 34).

All alternatives contain provisions to close some roads in order to reduce harassment and poaching. Past experience has shown these closures difficult to enforce. Once roads are effectively closed, elk use increases to near normal levels. In the Tyee area planned road closures should improve elk use of habitat adjacent to roads.

Timber Harvest

The greatest effect timber harvest would have on terrestrial vertebrates during the first decade would be the modification of habitat by clearcutting. The amounts range from 66,780 acres in Alternative 1 to 19,915 acres in Alternative 8 (see Table 1-2). The removal of mature and old growth stands eliminates the habitat of those species of animals adapted to exist there. If similar unoccupied habitat exists nearby, then those displaced individuals could occupy them. It is unlikely that such a situation exists as it is assumed that habitats are currently at carrying capacity.

For certain species (e.g. elk, deer, spotted owls and other cavity dwellers) which are influenced by habitat availability and arrangement, efforts will be made during the first decade to schedule the harvest of mature and old-growth forest to benefit these species or to minimize adverse impacts.

In the short term, all alternatives except 5 would have at least 65,000 acres of old growth forest remaining. Although the arrangement of this acreage may not be optimum for all species, there would likely be sufficient habitat after one decade of management to retain a representative ecosystem.

In Alternatives 3, 4 and 7, approximately 52,000 acres (Table 1-3) are proposed for modified area control management, and with the exception of riparian zone habitat on third order and larger streams, the lands are confined to corridors. (The riparian zones are scattered across the district.) Mature and old growth forests, a necessary element of habitat diversity, would be located in these corridors. These also are the lands that would provide the major portion of the snags for cavity dwellers, northern spotted owl habitat, survival cover for elk and ties to other corridors.

For Alternatives 2 and 9 the same issues are applicable, but the land area proposed for management is 24,800 and 35,900 acres, respectively. In Alternative 9 no harvest is planned from riparian zones on third order and larger streams.

Currently there are about 110,900 acres of old growth (196+ years) on BLM-administered timber lands in the SYUs (Table 3-8). If Alternative 8 were selected, old growth would increase over time and have a beneficial impact on species using this habitat (Table 3-8 and Appendix E). However, if any other alternative were chosen, old growth on BLM-administered land would decrease over time. The decreases range from 37 percent in Alternative 7 to 93 percent in Alternative 5 (see Table 3-9 and Appendix E). Related decreases in animals (see Appendix D) that find their optimum habitats in these stages would be probable. Examples are the big brown bat, northern flying squirrel and pileated woodpecker. The actual viable old growth habitat is less than appears in Appendix E because a portion of the remaining old growth would be in riparian zones that, because of their long, narrow configuration, would not have true old growth habitat characteristics. In the long term, enough mature and old growth habitat would be provided by Alternatives 6 through 8 to assure maintenance of viable populations of animals dependent on these habitats. Alternatives 1 through 5 and 9 would not do this.

When habitat structure on all lands in the EIS area (see Chapter 2, Animals) is examined (Appendix F), old growth would decline in all alternatives. In the long term, all old growth timber remaining in the EIS area would be on Federal lands administered by BLM and U.S. Forest Service. With this reduction of old growth habitat, a related reduction of old growth dwelling populations would be probable (see Appendix D).

The Tyee area is the most important elk area in the Roseburg SYUs. In total it comprises about 5 percent of the State's Tioga Wildlife Management Unit, which has historically produced the majority of the elk harvested in southwest Oregon.

Planned timber management activities in the Tyee area would change existing habitat conditions and influence elk populations as shown in Table 3-10. In the short term elk populations would increase in the Tyee area under all alternatives as a result of increased forage produced by clearcut harvest, provided that vehicle access does not lead to increases in harassment and poaching. Planned road closures should help reduce such problems. For all alternatives the population would peak in the second decade, then decline to a level similar to that which presently exists by the end of the second decade. In the long term, 30 to 50 years hence, a gradual decline from second decade levels is expected for all alternatives except 8. The

Table 3-10 Estimated Elk Population Changes on BLM-Administered Lands in the Tye Area ¹

Alternative	2nd Decade	5th Decade	10th Decade
1	No change	-25%	-25%
2	No change	-25%	-20%
3	No change	-25%	-30%
4	No change	-25%	-20%
5	No change	-10%	-20%
6	No change	- 5%	- 5%
7	No change	-20%	-20%
8	No change	No change	No change
9	No change	-25%	-20%

¹ All values ± 5 percent

Source: BLM District and State Office personnel

estimated elk population 50 to 100 years in the future is expected to be 20 to 30 percent less than present levels for Alternatives 1 through 5, 7 and 9. Alternative 6 is expected to show a 5 percent decline, while Alternative 8 no change.

Because of its importance to elk, the Tye area has certain management prescription designs to benefit elk in Alternatives 3, 4, 7 and 9. They include: 30 to 40 percent of clearcut area consisting of smaller (15-20 acre) clearcuts and of a shape which maximizes edge habitat; a distance to cover not to exceed 500 feet within those clearcut units; and a minimum cover width adjacent to units of 200 feet. These design features along with planned road closures would benefit deer and elk and help reduce long-term adverse impacts in this area.

Decreases in mature habitat (116-195 years old) would occur in all alternatives. The decreases would have an adverse impact upon the animal populations occurring there.

In Alternatives 1 through 7 and 9, increases occur in pole/sapling and young second growth and associated animal populations would have corresponding changes (see Appendices E and F).

Early successional stages (1-15 years) following harvest would benefit some species. The savannah sparrow, brush rabbit, mountain beaver, deer, elk and mountain quail are examples of species that use early successional stages. There are currently some 75,000 acres of early seral stage (less than 15 years old) vegetation on BLM-administered timber land and an additional 370,000 acres of like habitat on other ownerships within the SYUs. Since this stage presently comprises about 30 percent of the total land base and will continue as such in the future, there would be adequate levels in both the short and long term to meet the habitat needs of species associated with these

successional stages.

In future decades, except for Alternative 8, clearcutting acreage would decrease while commercial thinning dramatically increases. Commercial thinning would occur in the pole/sapling and young second growth that account for the majority of habitat remaining at the end of 10 decades (see Table 1-2 for acreage to be thinned during the first decade).

Commercial thinning removes up to 40 percent of the basal area of the forest and has several effects on wildlife habitat. The structure of the forest becomes more simplified and animal species diversity decreases. The stand is opened up and its value as thermal cover is reduced (Edgerton and McConnell 1976). Hiding cover is also reduced and forage may not increase, for as Edgerton (1972) pointed out, deer and elk use is less in partial cut areas (30 percent basal area removed) than in either clearcuts or unlogged stands. These alterations resulting from commercial thinning would result in lowered deer and elk populations in comparison to present day clearcut prescriptions.

Forest birds would be affected. As Franzreb and Ohmart (1978) show, thinning decreases habitat value for birds that forage by searching in the tree foliage or gleaning in timber. Species such as red-breasted nuthatch and golden-crowned kinglets would be reduced, while ground feeders such as the robin and house wren would increase.

Cooper's and sharp-shinned hawks use dense second-growth Douglas-fir as their primary nesting habitat (Reynolds 1971). The quality and quantity of this habitat would be reduced by commercial thinning.

Commercial thinning is not expected to result in any significant adverse effects on wildlife in the short term because of the small proportion of the land base scheduled for treatment.

The skidding of logs during yarding destroys low vegetation and compacts the soil. The complete but temporary destruction of surface vegetation due to yarding (see Table 3-2) would reduce the amount of habitat for small rodents and insectivores. Ground disturbances that do not remove excessive topsoil may benefit local wildlife populations such as elk and deer, seed-eating birds and certain rodents that depend on early successional communities. Swanson (1970, cited in Bunnell and Eastman 1976) reported significantly higher elk use on moderately or heavily disturbed sites than on lightly disturbed sites.

Snag-dependent wildlife such as woodpeckers and other cavity dwellers would be adversely affected due to snag removal during harvest operations. Based on the work of Thomas (1979), three snags of prescribed sizes per acre would provide for

maximum populations of primary excavators. To manage primary excavators at the 60 percent level (considered a safe level) requires about two snags (of prescribed sizes) per acre. Most private lands are not routinely managed for cavity users; therefore, the habitat component maintained on BLM-managed lands is crucial to the survival of snag-dependent species. District surveys revealed that snags and/or wildlife trees are being provided at the rate of 0.1 per acre on recent harvest units.

Using the snag management components displayed in Table C-4, Table 3-11 was developed to describe expected long-term snag densities on the BLM-administered land base.

As can be seen from the table, only Alternative 8 reaches the 60 percent management level, although Alternatives 6 and 7 are close. To provide maximum wildlife benefits, snags should approach an even distribution throughout the land base. Alternative 8 is the only one that approaches even distribution.

During the first decade, impacts would be minimal because of the large amount of unharvested land in the SYUs. However, for all alternatives except 6, 7 and 8, snag dwelling species would decline to below BLM target levels in the long term (see Table 3-11). This would be a significant adverse impact as populations would fall below self-sustaining levels.

New snags are created by natural mortality in the forest. All alternatives except Alternative 8 would employ some amount of mortality salvage during the decade (see Table 1-2). The number of trees per acre, their age and size are variable and not predictable. While in general the impacts would

not be immediately significant, these trees are the snags and down forage logs of the near future and removing them eliminates potential and needed habitats.

Riparian habitat is important as 88 percent of the terrestrial wildlife species in the area use it to some degree. The importance of this habitat is the result of many factors, including cover, food, water, edge and microclimate. The maintenance of its values depends on sustaining the structural integrity of the vegetation. Any alteration of its structure decreases its value to terrestrial wildlife. For most riparian areas, best management for wildlife means no entry.

Table C-4 shows how each alternative treats riparian zones. Alternative 8 is the only alternative which provides any protection to small first and second order streams unless they occur in an area under other forms of management in the constrained timber base. Approximately 12,150 acres of this habitat (first and second order streams) would be modified and replaced by younger vegetation if any alternative except Alternative 8 were selected. Riparian habitat next to first and second order streams is more like adjacent upland habitat and its loss is not as important as the loss of riparian habitat on higher order streams.

Riparian vegetation on third order and larger streams would undergo some planned harvest in all alternatives except Alternatives 6, 8 and 9.

Alternative 1 would substantially alter riparian habitat and the impacts would be significantly adverse. Management by modified area control as proposed in Alternatives 2, 3, 4 and 7 would also

Table 3-11 Long-Term Snag Density

Alt.	Snag/ac	Percent Management Level	Snag Distribution
1	0.13	<10	Would not occur on 96% of land base; adequate on 4% of land base
2	0.32	10	Would not occur on 89% of land base; adequate on 11% of land base
3	0.77	20-30	Inadequate occurrence on 82% of land base; adequate on 18% of land base
4	0.77	20-30	Inadequate occurrence on 82% of land base; adequate on 18% of land base
5	0.21	<10	Would not occur on 93% of land base; adequate on 7% of land base
6	1.43	40-50	Would not occur on 47% of land base; adequate on 53% of land base
7	1.25	40-50	Inadequate occurrence on 65% of land base; adequate on 35% of land base
8	2.24	70-80	Would not occur on 25% of land base; adequate on 75% of land base
9	0.77	20-30	Inadequate occurrence on 82% of land base; adequate on 18% of land base

alter riparian habitats on those acres entered. A yearly average of 12 acres clearcut and 96 acres partial cut of third order and larger riparian zones would be expected. The significance of this disturbance is amplified as "Habitat alteration [in riparian habitats] will affect wildlife far more than indicated by the proportion of the total area disturbed" (Thomas 1979).

Food supplies for grazers and browsers are more readily available in the early successional stages as compared with other successional stages. Deer and elk use would increase and peak six to eight years following clearcutting (Harper 1969; Crouch 1974). However, the food supply may not be utilized if sufficient hiding or escape cover is not nearby. To assure sufficient wildlife cover, clearcuts should not exceed 40 acres. In the sample five-year timber sale plan, 59 of the 953 sale units would exceed 40 acres in size. The size ranges from 2 to 51 acres, but averages 27 acres. Clearcut size is only part of the mechanism necessary to provide cover near feeding areas. The other is to allow regrowth to provide cover (about 10 years) prior to clearcutting on adjacent lands. Without this timing, the forage created may not be utilized as no cover is available. Alternatives 6 and 8 provide for 10- and 15-year intervals respectively, between adjacent clearcut units, and all other alternatives provide for at least 3- to 5-year intervals. As part of harvest scheduling design features, a 10-year interval would be applied to all lands under Alternative 9, where possible during the first decade, so long as it did not limit the ability to meet the prescribed allowable cut. Should conflicts arise between the 10-year spacing standard and meeting the allowable cut level, the interval would be lowered. Such design features serve to distribute harvest units, mitigating adverse impacts to species which utilize mature and old-growth forest habitat.

Other Timber Management Treatments

Other treatments (Table 1-2) alter animal habitat through vegetative manipulation.

Slash burning would eliminate most live vegetation from the site and 80 to 90 percent of the combustible material less than three inches in diameter would be consumed. Larger material is generally charred in place. Table 1-2 lists acres to be burned for all alternatives. These effects vary with the intensity of the burn, but immediate impacts would be removal of vegetation and on site reduction of associated animal populations. This would last less than one growing season, after which a vigorous growth of grasses and forbs would appear and animal populations adapted to early successional stage vegetation would increase.

The removal of woody material reduces obstructions to deer (Crouch 1974). Other species such as juncos and wrens use logging slash as activity centers. Juncos declined when slash was burned (Franzeb and Omart 1978). Charring of the larger material removes bark and eliminates microhabitats for invertebrates that are an important item in the food chain. In addition, the resulting habitats lack structure that slash provided and are more simplified.

Harper (1969) reported higher Roosevelt elk use on logging sites that had been burned than on those that had not been burned, and explains that on burned sites grasses were more than three times as abundant. Grasses are a preferred food item of elk. He warned, however, that slash burning would not necessarily increase forage and subsequent elk use on all sites as physical characteristics make each site different in its response to burning. Also, Crouch (1974) indicated that slash burning increased the food supply for black-tailed deer. In the Roseburg SYUs grasses are commonly found in the early seral stage plant communities. Some clearcut units throughout the district are dominated by grasses. This includes clearcuts in the Tyee area, the primary elk use area.

Mechanical piling of slash would cause soil disturbance and have impacts similar to those caused by yarding. Piling removes downed slash that may cause barriers to large ungulates. Subsequent burning removes these barriers and enough debris may be left to provide habitat for some birds and small mammals.

All alternatives except Alternative 7 call for herbicide use in site preparation and conifer release during the decade. The impacts from all alternatives except Alternative 7 are the same, only the magnitude changes. (See Table 1-2 for acres treated.)

There are four major types of impacts to animals that could be associated with silvicultural herbicide application: exposure to acute toxic levels, exposure to chronic toxic levels, habitat modification and carrier impacts. The following is a brief discussion of these four impacts. Additional information may be obtained from the final EIS on herbicides (USDI, BLM 1978).

Newton and Norris (1968) sampled blacktail deer taken from treated sites (2,4,5-T & Atrazine), and were unable to detect residues in most tissues. One animal was found to have a trace in the liver. In a study by the manufacturer, goats given 0.2 mg triclopyr/kg daily for 10 days were found to have tissue residues above the detection limit of 0.003 ppm in only the liver (0.004 ppm) and kidney (0.013 ppm).

According to Dost (1983), if an assumption of feed intake by deer at 3 percent of body weight per day is taken, at the hypothetical maximum of 400 ppm of herbicide in browse, intake will be 30 grams feed/kg or 12 mg herbicide/kg. In the goat study the maximum concentration in muscle was between zero and 0.003 ppm, and will be taken as 0.003 ppm. Studies in other species show that tissue concentration is proportional to dose rate. The proportional concentration in the animal's muscle would be 0.18 ppm (0.18 mg/kg) and 0.24 ppm (0.24 mg/kg) and 0.78 ppm (0.78 mg/kg) in the liver and kidney respectively. To acquire these dosage levels, an animal would have to forage in freshly treated areas for 10 consecutive days providing there would be no chemical breakdown or deterioration. Therefore, the potential for wildlife to suffer acute or chronic toxic effects is unlikely at proposed herbicide use rates (see Tables 1-4 and 3-17).

Herbicides have pronounced impacts on wildlife habitat. These impacts are brought about by losses of habitat diversity and stratification resulting from the temporary setback of certain plants that are in competition with the desired coniferous species. This would adversely impact those animals that utilize the grass/forb and shrub/seedling successional stages.

Diesel oil is sometimes used as a carrier for forest herbicides. Data on the toxicity of diesel oil on wildlife are limited; however, some work has been done on the adverse effects on adult ducks (Tucker and Crabtree 1970; Hartung 1966; Hartung 1965). It is unlikely that wild animals would consume lethal amounts of the carrier because of the dilution factors involved. It may, however, adversely affect the palatability of the forage. Other potential impacts include the coating of eggs, thereby affecting their hatchability, and the wetting of individuals, making them more susceptible to other environmental stresses. However, data are insufficient to predict the impacts of diesel oil carrier on animals in the EIS area.

Precommercial thinning, although it may open a young forest canopy, generally does not benefit deer and elk because the unremoved slash impedes movements. The obstacle presented by slash accumulations restricts deer and elk from utilizing any forage increases which result from the thinnings. Cover use is also restricted by slash accumulations. Therefore, reduced deer and elk use would occur on those acres precommercially thinned (see Table 1-2). This condition could last as long as two decades before decomposition removed the obstacles.

Conversely, birds and small mammals may increase their use of an area following precommercial thinning. Slash accumulations provide cover for them and any increases in forage production can be utilized.

Fertilization increases the growth and palatability of many plant species. These increases may be utilized by wildlife which would be a short-term positive impact.

Fish

Impacts of timber management on fish and aquatic habitat fall into the broad categories of increased accumulation of bottom sediments, increased amounts of suspended sediments, altered amounts of stream flow, introduction of logging debris, change of water temperature, destabilization of banks and channels and reduction of instream structure.

The impacts from the nine alternatives differ primarily in magnitude. These differences reflect the acres of land treated and miles of road built. For instance, Alternative 8 has the fewest miles constructed, while Alternative 1 has the most miles of road constructed. (See Table 1-2 for all treatments.)

On lands administered by BLM in the SYUs, there are approximately 270 miles of streams that support cold water fish (see Table 2-11). Analysis of the sample 5-year timber sale plan shows that approximately 17 miles of stream that support cold water fish pass through or are adjacent to 77 harvest units.

Aquatic invertebrates, which are important both as food for fish and as indicators of stream quality, can also be modified or destroyed by the same factors that affect fish habitat. It is assumed that impacts to most invertebrates would be similar to those experienced by fish in localized areas. Research by Erman et al. (1977) revealed that when buffer strips of at least 30 meters (about 98 feet) width on each side were maintained, the macro-invertebrate populations were indistinguishable from those of unlogged stream.

Maintenance of buffers helps minimize stream degradation. Since Alternative 1 has no provisions for buffer strips except as provided by the Oregon Forest Practices Act, stream productivity might be adversely affected.

Chapter 3, Impacts on Water Resources, provides data on expected amounts of sediments and water that would reach the streams of the SYUs and compares them to existing amounts. Many of the analyses and conclusions appearing in this section are based on those data.

Transportation System

The construction of roads can add greatly to the sediment load of a river. In Alternatives 1, 2, 3, 4 and 9, road building during the decade would be more than in the past decade; however, sedimentation from road building would be increased only in Alternatives 1 and 2 (see Table 3-6). Analysis of the sample five-year timber sale

plan shows about three miles of road would be built on fragile or unstable soils that are adjacent to streams with fishery values. If sedimentation increased, the impacts would be adversely significant to localized areas. Downstream sedimentation could occur and could have significant effects.

In discussing impacts to the aquatic invertebrates, Erman et al. (1977) suggest that repeated failure of road crossings was the cause of disruption of the stream biota, not the construction of road crossings. Investigations in the vicinity of newly installed culverts showed only a slight impact.

Three new roads identified in the sample five-year timber sale plan would cross streams with fishery values. All are on stable soils so only short-term localized impacts are expected.

Timber Harvest

Timber harvest can have an adverse impact on fish habitat by removing the riparian zone, changing water yield and increasing sedimentation.

Removing the riparian zone, including old growth conifers, would increase the amount of fine organic material, reduce the number and quality of pools, reduce useable spawning gravels, reduce macro-invertebrate production areas, destabilize banks and channels, and increase water velocities. Logging riparian zones would also increase sedimentation of stream bottoms and change temperature regimes by decreasing shade. However, where some streamside vegetation is retained, no change in temperature was observed (Brown and Krygier 1970). Water temperatures would not increase if Alternatives 2 through 9 were selected. Alternative 1 makes no provision for riparian buffers and water temperatures would be expected to increase. These increases are not quantifiable but impacts are expected to be adverse.

Clearcutting increases water yield (see Impacts on Water Resources), which could have a scouring effect on stream bottoms, thereby removing gravel and aquatic vegetation. Based on the analysis described in Chapter 3, it is estimated that water yield changes would have a negligible impact to the SYUs as a whole.

Harvest and yarding could contribute considerable sediment to local streams. Increases in bottom sediments, according to Gibbons and Salo (1973), cause the most damage of all factors affecting aquatic life. The amount of sedimentation would depend on the alternative selected. Alternatives 4, 6, 7, 8 and 9 would reduce sedimentation compared to past activities, while Alternatives 1, 2 and 3 would result in an increase (see Table 3-6).

While changes in fish production cannot be quantified, any increase in sediment would have

an adverse impact while decreases would be beneficial.

Other Timber Management Treatments

Burning, animal damage control, precommercial thinning and fertilization are not expected to have a significant impact on fish.

The chemicals proposed for use for vegetation control and the levels of their application are not expected to measurably affect aquatic vegetation. Streamside vegetation that provides shade could be altered in a worst case circumstance. Buffer strips along streams should prevent this from occurring. However, due to pilot error, some parts of these buffer strips could receive applications, and some detectable amounts could reach the stream.

Toxic effects of herbicides on fish have been documented in the laboratory (U.S. EPA 1977). However, proposed field application rates would be considerably less than the minimum lethal dose for those species tested and toxic effects are not expected. (See BLM's FEIS Vegetation Management with Herbicides, Western Oregon 1978 through 1987, for more detailed information.) It should be noted that long-term effects, particularly under field conditions, are more difficult to determine than are effects in short-term laboratory tests. Also, Cameron and Anderson (1977) felt that more study use was needed in order to evaluate the impacts to aquatic plants and animals under field conditions. However, Cameron and Anderson's monitoring program in 1977 and Anderson's monitoring in 1979 showed that amounts of herbicides in streams did not exceed EPA's "safe" level standards.

Threatened and Endangered Animals

Threatened and endangered species receive special attention under the terms of the Endangered Species Act of 1973, as amended, and BLM policies and guidelines. Known locations of these species are managed and special precautions taken to ensure their well-being. (See Chapter 1, Forest Management Treatments and Design Elements.) Because of their habitat requirements and locations, no impacts are expected to occur to the Columbian white-tailed deer and the bald eagle.

Transportation System

Threatened or endangered species would probably be affected only to the extent that road construction could open previously inaccessible areas. This impact cannot be quantified or qualified. Where road construction may affect a given species, special measures are taken to prevent significant adverse impacts.

Timber Harvest

Habitat modifications caused by clearcutting would have long-term adverse impacts on old growth-dwelling species. The northern spotted owl, a State-listed species, is dependent on old growth closed-canopy forests and would be greatly affected.

The original Oregon Endangered Species Task Force management recommendations for each pair of owls (in effect during the preparation of the proposed MFP) called for total protection of a 300-acre old growth core area (if available) and an additional 900 acres to be managed such that at least 50 percent of this acreage would occur as stands of 30+ year-old forests. Based on these recommendations, Alternatives 3, 4 and 7 would protect habitat for 18 pairs in the long term. Alternative 9 would provide habitat for 18 pairs under the recommendations, plus an additional pair by other allocation for a total of 19 pairs in the long term. It is highly probable that at least 25 viable pairs would remain at the end of the first decade as a result of land use allocations and harvest scheduling. Alternative 6 would protect habitat for 25 pairs, and Alternative 8, habitat for 55 pairs in the long term. Alternatives 1, 2 and 5 have no provisions to protect owls in either the short or long term.

Examination of the sample five-year sale plan reveals planned harvest units would involve the habitat of 23 of the 55 known pairs. Consideration will be given to scheduling harvest units to eliminate or reduce adverse impacts.

A revision of Task Force recommendations has resulted from recent data. The revision recommends that forests be managed to provide 1,000 acres of old growth per pair of owls within a 1.5 mile radius of nest sites. Currently, 42 pairs occupy habitat that meets this criterion. The following analysis of the relationship of the alternatives to spotted owl habitat is based on the assumption that the revised recommendations identify minimum essential habitat. Land use allocations in Alternatives 6 and 8 would provide enough habitat for 24 and 42 pairs respectively in both the short and long term. None of the other alternatives would provide habitat for any owls in the long term. Because timber sale locations beyond the five-year plan are not known, it is not possible to predict when various pairs would have their habitat removed.

Conclusions

With the exception of Alternative 8, both short- and long-term reductions of old growth would have an adverse impact on old growth species. In the short term adequate habitat would exist for viable population levels of old-growth related species in all alternatives except 5. Short-term habitat diversity will improve under all

alternatives as the seral stage mix is enhanced by harvest and succession. Alternatives 1, 2 and 5 significantly reduce mature and old growth habitat in the long term, and selection of one of these alternatives would have significant adverse impacts on old growth species and habitat diversity. In the long term, intensive forest practices in Alternatives 1, 2, 3, 4, 5 and 9 would lead to even-aged stands that would significantly reduce habitat diversity and adversely impact wildlife.

Simplification of forest habitats would also have a significant effect on wildlife. Pole, sapling and young second growth (which would account for most of the forests, except in Alternative 8) have low environmental variables (simple structure) even under natural conditions. Further loss of structure from thinning would make these age classes of very low value for most wildlife. Further simplification resulting from broadcast burning and herbicides would add to the loss of diversity. This long-term simplification and loss of diversity would be significant and adverse.

During the short term, snag-dependent wildlife would decline but remain at viable levels. Continued decline in the long term would reduce populations below viable levels in Alternatives 1 through 5 and 9. This is a significant adverse impact. Alternatives 6 and 7 would support marginal populations while Alternative 8 would provide for adequate numbers.

Riparian habitat occupies about 3 percent of the forest land base and is used by 88 percent of the terrestrial wildlife species. This crucial habitat would be adequately protected through the selection of Alternatives 6, 8 or 9. Selection of any other alternative would result in varying degrees of adverse impact to riparian habitat. Alternatives 1 and 5 would result in significant adverse impacts to this habitat.

Habitat removed by road construction is assumed to be permanently and irretrievably lost on those roads proposed as part of the permanent road system. The construction of new roads would lead to harassment of wildlife and reduce useable elk and large carnivore habitat within one-quarter mile of these roads. Planned road closures, if effective, would reduce this impact.

Deer numbers are not expected to be greatly modified by any of the alternatives in the short term, but once commercial thinning dominates the harvest, beginning in the sixth decade, populations may be reduced. Because of different requirements, elk numbers would be influenced by many of the alternatives. The changes would be due to changing habitat conditions, new road construction, thinning and other habitat modifiers.

No adverse impacts to elk are expected in the short term. Elk populations would in fact increase,

peaking in the second decade. In the long term, 30 to 50 years hence, a gradual decline from second decade levels is expected for all alternatives except 8. The estimated population in 50 to 100 years is expected to be 20 to 30 percent less than present levels for Alternatives 1 through 5, 7 and 9. Alternative 6 is expected to show a 5 percent decline, while Alternative 8 would result in no change. In the long term projected declines in elk production on Roseburg District lands may place additional demands for elk production on other federal lands including the Umpqua National Forest, which adjoins the east boundary of the Roseburg District.

If it is assumed current fish populations reflect conditions and harvest regulations over the past decade, then it can be assumed that fish populations would decline under Alternatives 1 through 3 due to increased sedimentation. Fish would increase in Alternatives 4, 6, 7, 8 and 9 and remain the same under Alternative 5. The population changes cannot be quantified.

The northern spotted owl is the only species listed by the State of Oregon as threatened that would be adversely impacted. The original recommendations of the Oregon Endangered Species Task Force influenced the proposed alternatives for the EIS area. Assuming that these recommendations identify minimum essential habitat, 18 of the 55 known owl pairs in the SYUs would be fully protected in the long term by Alternatives 3, 4 and 7, 19 pairs by Alternative 9, 25 pairs by Alternative 6, and 55 pairs by Alternative 8. A recent revision of the Task Force recommendations indicates that minimum habitat requirements may be greater. If so, Alternatives 6 and 8 would provide habitat for 24 and 42 pairs respectively. No other alternative would support any owls in the long term.

In all of western Oregon the combined BLM timber management decision for Medford and Coos Bay districts and the new preferred alternatives for the Eugene, Roseburg and Salem districts would come close to meeting the original Oregon Endangered Species Task Force recommendation for protection of the northern spotted owl. At the end of the first decade it is expected that all western Oregon BLM districts combined would maintain at least 90 pairs of owls, resulting from allocations made in land use plans and harvest scheduling.

Cumulative adverse impacts are expected to be minimal in the short term. Habitat for an estimated 78 of the recommended 90 pairs would be provided long-term protection through the land use planning process. In the long term a BLM shortfall in providing the recommended portion of owl pairs may result in a significant adverse impact to the species unless the unmet needs were reapportioned by the Oregon Endangered Species Task Force.

Impacts on Recreation

The impacts of timber management on recreation are related to changes in the physical setting. From the setting, recreationists derive different satisfactions, experiences and benefits. As changes in the setting affect experiences, levels and patterns of visitor use change. For example, in one area recreation use might be facilitated by road construction. In another area, visitation may show a long-term decline if the area's setting or resource availability is significantly altered. Some visitors may relocate to other areas where opportunities for desired experiences exist.

Each alternative varies in approach and emphasis on meeting recreational needs. Some localized recreational demand would not be met if areas and facilities are not provided. The provision of areas and facilities for recreational pursuits would be beneficial since opportunities would be available to meet increasing demand (Chapter 2, Table 2-13).

As natural or natural-appearing environments are altered due to timber harvest, opportunities related to appreciation of the natural environment are reduced. Opportunities for such activities as camping, hiking, fishing, hunting, nature study and sightseeing would be degraded in some areas. The degree and magnitude of impact would be dependent upon the level of intensive timber management under each alternative.

The alternatives provide for varying degrees of protection, use and maintenance of existing recreation sites. Generally, Alternatives 1 and 5 have minimal or no provisions to preserve opportunities for additional recreation site development. Alternatives 2, 3, 4, 6, 7, 8 and 9 allow for the protection of recreation development opportunities. Assuming these developments are realized, these alternatives would adequately meet increasing demand on public lands related to such activities as camping, picnicking, hiking, horseback riding, swimming and water-oriented use (see Appendix C, Table C-4).

Clearcutting can enhance certain recreational activities such as hunting, collecting, berry picking, general sightseeing, picnicking and using ORVs by creating areas, improving access or providing openings for scenic views. The impacts of clearcutting would be most significant under Alternative 1 and moderately significant under Alternatives 2, 3, 4, 7 and 9. Alternatives 5 and 6 call for levels of clearcutting similar to that under the existing situation. Under Alternative 8, clearcutting would be significantly less than under the existing situation.

Many timber management activities create noise, odors, dust, fumes and additional traffic. Some recreational opportunities would be degraded by

these factors. However, many road-oriented dispersed recreationists indicate that impacts of timber management do not detract from their enjoyment (Downing and Clark 1979).

Area-wide impacts to fishing and hunting success are dependent upon impacts to the species (see Impacts on Animals). In the short term, demand for hunting (see Table 2-13) would be met under all alternatives. In the long term, elk population decreases under all alternatives except 6 and 8 (see Table 3-11) are expected to lead to decreased elk hunting opportunities and a corresponding reduction in hunter use. Declining fish populations under Alternatives 1, 2, 3 and 5 are expected to result in a similar reduction in fishing opportunities and related angler use (see Impacts to Animals, Conclusion). Decreased hunting and fishing opportunities could result in a relocation of these recreationists to other areas.

Vehicular access would be improved as a result of new road construction. The beneficial and adverse impacts on recreation would be most apparent under Alternative 1 and least apparent under Alternative 8.

Analysis of the sample 5-year timber sale plan indicates that slight reductions or increases in visitor use could occur at specific sites. Clearcut units near Severt Iverson County Park, Berry Creek Reservoir and Cavitt Creek County Park may create slightly adverse visual and auditory impacts which would degrade the recreation experience for some facility users. Harvest units in areas offering off-road vehicle opportunities (Yellow Creek Mountain, Hubbard Creek, Deadman Mountain) would not create significant adverse impacts but could result in slight increases in visitor use at these areas.

Timber harvest in the vicinity of potential hiking and equestrian trails could degrade the recreation experience for most future trail users but could also provide clearings with scenic viewing opportunities. Such impacts could occur along potential trails in the following areas: Berry Creek, Tyee, North Umpqua-south side, Old Fairview, Silver Butte and White Rock.

Environmental assessments which precede each timber sale will provide a site specific analysis of these potential impacts identified during the analysis of the sample timber sale plan.

Impacts to potential national wild, scenic or recreational rivers will be further analyzed in the environmental assessments which precede each timber sale. If it is determined during site specific analysis that timber management actions could adversely affect potential suitability of those sections of the Umpqua or North Umpqua Rivers as components of the national wild and scenic rivers system, BLM would consult with the National Park Service to develop appropriate

mitigation measures. There are no clearcut units in the sample 5-year timber sale plan within one-quarter mile of these river sections.

Conclusions

Visitor use increases or reductions may occur in certain areas as a result of impacts to specific recreation experiences. Alternatives 1 and 5 would serve to adequately meet increasing demand for motorized recreational vehicle use and some dispersed use areas. However, under these alternatives, demand associated with many other activities (e.g., hunting, fishing, watersports and developed site use) would not be met due to a loss of development opportunities, degradation of the desired recreation experience and effects on recreation-related wildlife populations.

Alternatives 2, 3, 4, 6, 7, 8 and 9 would serve to meet most recreational needs. In the long term, however, elk population decreases under all alternatives except 6 and 8 are expected to result in lower hunting success and a corresponding reduction in elk hunter use. Under Alternatives 1, 2 and 3, some fishing demand would not be met because declining fish populations are expected to result in a lower fishing success and some decrease in related angler use. A lower desirability of BLM-administered lands for fishing and elk hunting could occur.

The focus of Alternatives 6 and 8 is on dispersed activities, natural areas and protection of developed site opportunities in some areas. As a result, these alternatives would not be as responsive as Alternatives 2, 3, 4, 7 and 9 in meeting demand for hiking, horseback riding and off-road vehicle areas and trails.

Impacts on Cultural Resources

Complete area-wide field surveys of the SYUs to identify cultural sites have not been undertaken. However, complete cultural resource surveys will precede each specific timber management action that would result in ground disturbance or transfer of title (BLM Manual 8100, Cultural Resource Management). Under all alternatives, significant sites identified during these surveys would be protected in accordance with the National Historic Preservation Act of 1966 and Executive Order 11593, as stated in the Code of Federal Regulations (36 CFR Part 800).

Cultural resources not identified by intensive field survey could be inadvertently impacted under all alternatives. The potential for damage would be a function of the alternative's timber harvest level. Adverse impacts to such sites could occur through soil compaction, soil movement and/or chemical alteration by fire or mixing of organic matter. Soil compaction and soil movement could damage

artifacts and disrupt the internal structure of cultural deposits. If sites are uncovered, illegal artifact collecting could occur. A site's chemical alteration during slash disposal and site preparation could destroy combustible items, damage stone artifacts and contaminate carbon 14 dating samples, making them unreliable for scientific analysis.

The potential for damage from timber management activity to undiscovered sites would be greatest under Alternative 1 and least under Alternative 8. In a worst case, impacts would completely obliterate a site's remains. The potential for impacts would also be greater in areas of relatively high site density (e.g., Cow Creek, Camas Valley, Honey Creek-Susan Creek, Little River-Wolf Creek, Myrtle Creek, South Umpqua and White Rock-Dompier).

Road construction would provide additional access to known cultural sites, resulting in increased visitation. Vandalism, theft and site erosion could result. Esthetic, recreational, interpretive and educational qualities of the sites could be degraded. Road construction and/or timber removal on slopes above sites could result in increased rates of erosion and soil slumpage onto sites. These adverse impacts would be most likely under Alternative 1 and least likely under Alternative 8.

The landscape and vegetation surrounding a cultural site may be impacted by timber harvesting and road construction. Such impacts could reduce the site's esthetic appeal for recreation, interpretation and education. Impacts to the visual settings of cultural sites would be most likely under Alternative 1 and least likely under Alternative 8. Analysis indicates that the potential exists for visual setting impacts as a result of timber sales proposed in the sample 5-year timber sale plan. Site specific analyses of sales will be included in the environmental assessments which precede each timber management action. Should potential impacts to a site's setting integrity be identified, design art techniques and other constraints may serve to mitigate adverse impacts.

Conclusions

Appropriate measures would be taken to identify and protect cultural sites prior to ground-disturbing activities under all alternatives. Undiscovered cultural sites would be susceptible to damage from artifact breakage or destruction, displacement of materials and contamination of organic matter. Once a site is found, however, mitigation measures would be taken to minimize or avoid future damage. Under all alternatives, significant sites identified before logging would be managed to protect scientific and/or interpretive values.

Impacts on Visual Resources

Most timber management practices disrupt the land surface, change vegetative patterns, alter species composition, and thereby create visible contrasts (see Glossary) in the landscape. Assessing contrast for a proposed activity can indicate the severity of impact and help identify mitigation measures to reduce the contrast and meet VRM class objectives for an area (BLM Manual 8440). Environmental assessments will address site specific visual impacts and apply the Bureau's contrast rating system (see Glossary) to specific timber management actions. The severity of an impact on visual resources depends on such factors as landscape elements; location, number, size and shape of clearcut units; location and design of roads; yarding methods; amount and treatment of debris; and success of vegetative reestablishment in disturbed areas.

Visual resource management (VRM) classes shown in Figure 2-3 were based on an inventory and evaluation of the area's scenic quality, sensitivity and distance zone (see Glossary). During the land use planning process, VRM classes as described in Chapter 2 may be changed to resolve conflicts between visual and other resources (BLM Manual 8411). Upgrading an area's recommended VRM class would provide adequate scenic value protection and result in beneficial impacts. Downgrading VRM classes increases the potential for adverse visual impacts. As an example, an area in the affected environment recommended as VRM Class II but subsequently managed as Class III or IV would receive less protection. Consequently, the long-term effect of downgrading might be to lower scenic quality in downgraded and adjacent areas even though the Bureau's ability to affect an area's overall scenic quality is often limited by intermingled land ownership patterns (see Figure 1-1). In some cases the impacts of BLM timber management activities would be consistent with those on surrounding areas and would not create significant contrasts, but could tend to compound the degree of contrast by enlarging the scale of modification.

Table 3-12 gives total acreage for each VRM class by alternative. Under Alternative 8, visual resource conditions (scenic quality) would improve. Adverse visual impacts in highly scenic and sensitive areas would not occur or would be mitigated. Under Alternative 6, most highly scenic and/or sensitive areas would be protected with slight adverse impacts occurring along some county roads, portions of the South Umpqua River, Little River, Rock Creek and Cow Creek drainages and public lands in the viewsheds of some rural residential areas.

Table 3-12 VRM Classes by Acreage

VRM Class	Affected Environment ¹	ALTERNATIVE				
		1	2,3,4,7,9	5	6	8
I	30	30	30	30	30	30
II	75,700	2,400	9,300	1,100	26,600	75,700
III	22,900	400	13,600	3,000	22,400	22,900
IV	325,370	421,170	401,070	419,870	374,970	325,370
Total	424,000	424,000	424,000	424,000	424,000	424,000

¹ VRM class acreage as recommended through the visual resource inventory and evaluation of the existing environment (see Figure 2-3).

Table 3-13 Potential Impacts of the Sample Five-Year Timber Sale Plan on Visual Resources

VRM Class ¹	Area	Scenic Quality ²	Sensitivity Level ³	Clearcut Units Within Area ⁴
II	Olalla Creek	B	H	5
	Olalla	B	H	1
	Cow Creek Road to Peck	B	H	7
	Riddle	C	H	7
	Garden Valley/Lookingglass	B	H	6
	Tenmile	B	H	2
	Berry Creek Reservoir	A	H	4
	Camas Valley	B	H	15
	Highway 38 (Pass Creek to Safley)	B	H	3
	Coles Valley	A	H	2
	Main Umpqua River	A	H	5
	Pleasant Valley and I-5	B	H	5
	Divide to Scotts Valley	B	H	2
	Putnam Valley	B	H	2
	Canyonville to Azalea	B	H	7
	Riddle-Cow Creek Valley	B	H	14
	Milo to East Boundary	B	H	3
	Milo to Days Creek	B	H	10
	Canyonville to Days Creek	B	H	1
	South Myrtle Creek Drainage	B	H	10
	North Myrtle	B	H	5
	Dole	B	H	6
	Wolf Creek Falls	A	H	1
	Red Pond	A	H	4
	Little River	B	H	12
	Glide	B	H	3
	North Umpqua River, Rock Creek to Boundary	A	H	5
	Lower Rock Creek to Rock Creek Campground	B	H	12
III	Reston	B	M	4
	Drain-Yoncalla	C	M	9
	Elkhead	B	M	5
	Windy Gap (Smith River Road)	B	M	3
	Smith River	B	M	9
	South Myrtle Creek Drainage	B	M	2
	North Myrtle	B	M	3
	Buckhorn Road	B	M	2
	Cavitt Creek	B	M	12
	Driver Valley	B	L	7
	Camas Swale and East Sutherlin	C	M	5
	Nonpareil	B	M	4

¹ Recommended VRM class based upon an inventory and evaluation of the existing environment (see Figure 2-3).

² Scenic quality (see Glossary) is keyed as A-high, B-moderate or C-low.

³ Sensitivity levels (see Glossary) are keyed as H-high, M-moderate or L-low.

⁴ All potential impacts listed would be in the FM-foreground/midleground distance zone (see Glossary).

Adverse visual impacts under Alternatives 2, 3, 4, 7 and 9 would be low to moderate. Many highly scenic and/or sensitive areas would be protected. Attempts would be made to mitigate adverse impacts on all public lands. Protection would be afforded all State of Oregon designated scenic corridors (e.g., North Umpqua Highway 138, segments of Highways 42, 227 and Interstate 5), essential bald eagle habitat and recreation sites. Under Alternative 7 the intensive timber production base would be 72,128 acres less than under Alternatives 3 and 4 and 99,388 acres less than under Alternative 2. The withdrawal of this acreage would result in a lower level of timber harvest and consequently fewer impacts to visual resources than under Alternatives 2, 3, 4 and 9.

Under Alternatives 1 and 5, adverse visual impacts would be high. Some protection would be provided for certain highly scenic and/or sensitive areas, primarily essential bald eagle habitat and existing recreation sites.

Table 3-13 summarizes the potential visual impacts of the Original Proposed Action's sample 5-year timber sale plan. The table identifies the number of clearcut units in recommended VRM class II and III areas. The potential for impacts would be greatest in foreground-middleground areas with high scenic quality and high sensitivity. Following application of the contrast rating system, necessary mitigation measures would be identified. Depending upon VRM class objectives, possible mitigation measures under all alternatives except 1 include manipulating the size and shape of clearcut units, partial cutting, longer harvest cycles (see Table 1-3), screening with buffer strips, hydromulching road cuts and fills, complete debris disposal, replanting with a conifer mixture and other special techniques. Visual resources along some streams with high scenic quality and/or sensitivity may be adversely impacted since all alternatives except 6, 8 and 9 result in buffer entry for some timber harvest (see Table 3-5 and Appendix C, Table C-4).

The adverse visual impacts of herbicide use would go unmitigated and would occur under all alternatives except Alternative 7. In the short term, vegetation sprayed with herbicides would create highly visible contrasts. In the long term, vegetative variety would be reduced as herbicides encourage conifers at the expense of other vegetation of high visual interest. Herbicides used on tall broadleaf species (madrone, oak, alder) cause long-term impacts of up to 20 years or until the dead vegetation is over-topped. Under all alternatives except 7 and 8, the impacts of herbicide use would be greater than under the existing situation (see Impacts on Vegetation).

Impacts on Areas of Critical Environmental Concern

Area of Critical Environmental Concern (ACEC) designation would improve management focus and provide guidelines to help achieve protection of important and relevant resource values. The alternatives vary in levels of ACEC designation. Some of the potential ACECs are also designated or proposed for other protective designation (see Table 2-14).

Under Alternatives 6 and 8, seven areas (3,100 acres) would be designated. Under Alternatives 2, 3, 4, 7 and 9, four areas (2,100 acres) are identified for ACEC designation. Of the remaining three areas, two are currently designated Research Natural Areas (RNA) and one is proposed for RNA designation. Alternative 1 calls for ACEC designation in four areas (600 acres). Alternative 5 has no provision for designation of ACECs.

Table 3-14 identifies the level of ACEC designation and potential impacts to each area by alternative.

Analysis of the sample 5-year timber sale plan indicates no sales would adversely impact those areas qualified for ACEC designation.

Impacts on Special Areas

Table 3-15 summarizes the potential impacts to areas with values which may warrant their designation as Research Natural Areas, Outstanding Natural Areas or Environmental Education Areas. Myrtle Island and Beatty Creek are currently Research Natural Areas and would not be adversely impacted under any alternative.

Alternative 1 allows for designation of those areas which would not affect the commercial timber production base of the SYUs. Alternatives 2, 3, 4, 7 and 9 allow for designation of those areas identified as having significant natural values for science, recreation or education. Alternative 5 provides no additional natural area designation. Alternatives 6 and 8 emphasize the study and designation of natural areas. However, some sites (e.g., Red Pond, Dompier Creek Landslide) with natural or environmental education values may be adversely impacted if they are not designated or do not receive other protective management.

Analysis of the sample 5-year timber sale plan indicates that no areas with known or suspected natural values would be impacted.

Impacts on Energy Use

Table 3-16 indicates the annual energy investment required by alternative, as expressed in British thermal units (Btu's - see Glossary).

Table 3-14 Potential Impacts to Areas Qualified for ACEC Designation

Area Qualified for ACEC Designation	A L T E R N A T I V E			
	1	2,3,4,7,9	5	6,8
1. Brad's Creek	0	0	-	0
2. Golden Bar	0	0	-	0
3. North Umpqua River	-	0	-	0
4. Tater Hill	-	0 ¹	-	0
5. Myrtle Island RNA	0	0	0	0
6. Beatty Creek RNA	0	0	0	0
7. North Myrtle Creek (Slideover)	-	0 ¹	-	0
Total ACEC Acreage by Alternative	600	2,100	0	3,100

0 = No impact - = Adverse impact

¹ Area is proposed for Research Natural Area designation which would protect the area's significant resource values.

Table 3-15 Potential Impacts to Special Areas

Area	Potential Designation ¹	A L T E R N A T I V E				
		1	2,3,4,7,9	5	6	8
Tater Hill ²	RNA	-	0	-	0	0
North Myrtle Creek ² (Slideover)	RNA	-	0	-	0	0
Woodruff Canyon Lands	RNA	-	0	-	0	0
Old Fairview	RNA	-	0	-	0	0
Little River Arch	ONA	-	0	-	0	0
Red Pond	EEA	-	0	-	0	-
Dompier Creek Landslide	ONA	-	-	-	-	0

0 = No impact - = Adverse impact

¹ Key for potential designation: RNA - Research Natural Area, ONA - Outstanding Natural Area, EEA - Environmental Education Area.

² Impacts to this area are further examined in the preceding section on Impacts to Areas of Critical Environmental Concern.

It is assumed that all energy consumed would be in the form of fossil fuels or derivatives, and any energy investment would constitute an irretrievable reduction of world supplies of petroleum-derived energy. The majority of energy consumed is attributable to road development and care and log production (all actions taken to harvest trees and get logs to the mill).

If the 716 billion Btu's attributable to the New Preferred Alternative were all expended in the form of gasoline, it would equate to 5.7 million gallons or about 0.4 percent of the 1.3 billion gallons of gasoline consumed in Oregon in 1980. This energy investment is insignificant if compared to the projected 1980 Oregon total of 581 trillion Btu's (Oregon Department of Energy 1980).

Impacts to Human Health

The possibility of human health being impacted by the use of herbicides is related to the toxicity of the herbicide, the likelihood of exposure and resulting dosage received (Norris 1975). While there are no chemicals that are non-toxic, a substance of moderate or high toxicity may represent no significant hazard if exposure is very low, just as a relatively non-toxic agent may be harmful if exposure is extensive and long term. Herbicides proposed for use in the SYUs are given in Table 1-4 and their toxicities and activities are given in Table 3-17.

Table 3-16 Estimated Annual Energy Consumption

	ALTERNATIVE								
	1	2	3	4	5	6	7	8	9
Energy Consumption (Billion Btu's)	834	770	741	723	528	536	514	218	716

Table 3-17 Herbicide Toxicity

Common Name	Acute Toxicity LD ₅₀ ¹ (Rats)	Commonly Used Term ²	Activity in the Soil	No Effect Level Dose in (mg/Kg/day)	Tolerances for Residues in or on Foodstuffs (40 CFR Part 180)
Asulam (Asulox)	8,000 mg/kg	practically non-toxic	short persistence—half-life 6 to 14 days.	(not available)	100 ppb
Atrazine	3,080 mg/kg	slightly toxic	absorbed on muck or clay—remains in 1 foot of soil.	200 (Reproductive ³)	20-250 ppb
2,4-D	300-1,000 mg/kg	moderately toxic to slightly toxic	leached in sandy soils, breakdown depends on microbial activity.	20 (Reproductive) 20 (Teratogenic ⁴)	100-500 ppb
Dalapon (Dowpon)	7,570 mg/kg (female) 9,330 mg/kg (male)	practically non-toxic 500 (Teratogenic)	leaches readily in soil, breakdown rapid and complete.	50-150 (Reproductive)	100-10,000 ppb
Fosamine (Krenite)	24,400 mg/kg	relatively harmless	rapid degradation—very little movement.	60 (Reproductive) 600 (Teratogenic)	(non listed)
Glyphosate (Roundup)	4,320-4,900 mg/kg	slightly toxic	strong absorption—very little or no leaching.	30 (Reproductive) 30 (Teratogenic)	100-6,000 ppb
Hexazinone (Velpar)	1,690 mg/kg	slightly toxic	half-life 2 to 6 months in silt loams.	60 (Reproductive) 300 (Teratogenic)	100-200 ppb
Picloram (Tordon)	8,200 mg/kg	practically non-toxic	sorption by organic matter and clays, may leach in sandy soils.	80-150 (Reproductive) 1,000 (Teratogenic)	50-500 ppb
Triclopyr (Garlon)	2,140-2,830 mg/kg	slightly toxic	possible leaching, half-life of 46 day.	30 (Reproductive) 200 (Teratogenic)	(non listed)

¹ LD₅₀ (Lethal Dose 50) is the dose of a substance that is fatal to 50 percent of the test animals. Also known as median lethal dose.

² Moderately toxic is 50-500 mg/kg; slightly toxic is 500-5,000 mg/kg; practically non-toxic is 5,000-15,000 mg/kg; relatively harmless is more than 15,000 mg/kg in a single oral dose to rats.

³ The highest dosage level at which no effects have been observed in test animals including loss of skin, hair, reduced litter size, or general lethal toxicity.

⁴ Fetus malformations during development, not associated with genetic change.

In general, exposure of humans to herbicides can occur in two ways: directly, by occupational means, or indirectly by environmental means. The number of persons that could be affected by herbicide application in the EIS area is very small. Planned application techniques have been shown to effectively reduce or prevent spray from drifting onto streams and water bodies. Posting of sprayed areas should effectively minimize involuntary exposure to forest users.

All herbicides proposed for use in the RSYUs are registered with the Environmental Protection Agency (EPA). Extensive studies of the absorption, distribution, metabolism and excretion of herbicides in animals have shown that herbicides and their metabolites are rapidly eliminated from tissues of most animals (including humans) and thus do not accumulate to harmful levels (Eligehausen et al. 1980, Lavy et al. 1982, Leng et al. 1982, Nash et al. 1982, Newton and Norris 1968, Norris et al. 1974, Sikka et al. 1977, and Wolfe 1976). There is no evidence of carcinogenic effects for any of the herbicides listed in Table 3-17. With respect to 2,4-D, Picloram, Glyphosate, Atrazine and Fosamine, some additional direct data are needed to assure certitude. The laboratory dosages at which potential reproductive effects have been detected or at which carcinogenic and mutagenic effects have been sought are much greater in concentration and duration than any exposure that could occur in the forest as a result of vegetation control treatments. Because of the limited toxicity of the herbicides and the low potential for exposure, the likelihood of an adverse impact on human health is negligible.

Impacts on Socioeconomic Conditions

The socioeconomic impacts are presented here for two different bases as a means of differentiating between the effects of potential timber management programs on existing socioeconomic conditions and their effects on the conditions expected to occur if the current timber management program were continued. The program manager must know how future conditions would be affected if the program were changed. The public is generally most concerned with how future conditions would differ from existing conditions. The impacts are presented mainly in table form, as changes measured from the existing condition and as changes measured from the no action condition--the condition expected if the current program were continued. The average 12-month harvest from the Roseburg District from 1976 to 1980 was 187.5 MM bd. ft. This recent experience is the baseline labeled the existing condition. The no action alternative, 201 MM bd. ft. per year, is the level which would have prevailed if the decadal allowable harvest (2,010 MM bd. ft.) had been sold and harvested in

constant annual increments. The average level of actual sales for 1976-1980 was 197.1 MM bd. ft. and for 1972-1975 was 208.9 MM bd. ft.

Table 3-18 shows projections representing average local employment and earnings potential of timber sales under all alternatives during the first decade after implementation. Impacts on employment and earnings would be phased in over a period of 2 or 3 years due to the customary time lag between sale and harvest. Impacts on receipts distribution would be delayed an additional year. The projections represent the local employment and earnings which would be realized if the annual volume sold under each alternative is promptly harvested and processed.

While it is anticipated that labor productivity will increase in future years, leading to fewer jobs per unit of primary timber processed (Wall and Oswald 1979). In order to simplify impact estimates, they have not been adjusted to reflect productivity changes. The effect of this simplification is to overstate the impacts on employment and earnings by about 10 percent in the short term, and by greater amounts in the long term.

Tables 3-19 and 3-20 focus on the impacts each alternative is projected to have on public revenue. Recently, Roseburg District's timber sale program has experienced wide swings in bid prices for stumpage. For example, in FY 1981 the average price of timber sold was \$260 per M bd. ft.; however, in FY 1982 the district recorded an average sale price of \$94 per M bd. ft. Given this volatility, tables 3-19 and 3-20 array possible impacts on public revenue against two baseline harvest levels and two levels of receipts. If FY 1981 sale values are the average for period 1984 - 1993, then average annual disbursements to O&C counties from the SYUs are projected to range from \$36.2 million in Alternative 1 to \$10.5 million in Alternative 8 (Table 3-19). When compared to the no action condition, Douglas County receipts from the harvest of timber on O&C lands in the Roseburg District could decline by \$.5 million in Alternative 1 or by as much as \$2.5 million in Alternative 8, if FY 1982 sales values are the average for the next 10 years. The average annual disbursement of severance tax receipts from CBWR lands to seven tax districts in Douglas County is projected to range from \$122,100 in Alternative 1 to \$35,500 in Alternative 8, if FY 1981 sales conditions prevail. Again, compared to a maintenance of the no action level, Alternative 1 would yield an average annual decline in severance tax receipts of \$7,200 while Alternative 8 would yield \$38,500 less if the district only averages \$94 per M bd. ft. over the next decade. Historically, the sale of timber on public domain lands in the Roseburg District has accounted for roughly 1 percent of the district's total receipts from the sale of timber. Assuming that percentage were maintained in all alternatives, Oregon's

Table 3-18 Short-Term Impacts Compared to No Action (and Existing) Condition on Local Employment and Earnings Related to Timber Harvest (Average annual amounts during first decade)

	Timber Industry Employment (Jobs)						Total Employment (Jobs)				Total Earnings (Millions of 1977 dollars)			
	Logging and Processing			Forest Management			Douglas County		Total for Regional Economy		Douglas County		Total for Regional Economy	
	Douglas County		Total for Regional Economy		Douglas County		Douglas County		Total for Regional Economy		Douglas County		Total for Regional Economy	
	No Action	Existing	No Action	Existing	No Action	Existing	No Action	Existing	Action	No Existing	Action	No Existing	Action	No Existing
Alt. 1 (Max. Tbr.)	+519	(+599)	+651	(+751)	+18	(+21)	+1,135	(+1,309)	+1,514	(+1,746)	+\$13.3	(+\$15.3)	+\$18.4	(+\$21.2)
Alt. 2 (Emp. Tbr.)	+389	(+469)	+488	(+588)	+15	(+16)	+ 851	(+\$12.0)	+1,135	(+1,367)	+\$10.0	(+\$12.0)	+\$13.8	(+\$16.6)
Alt. 3 (Low MHS)	+325	(+404)	+407	(+507)	+11	(+14)	+ 710	(+ 884)	+ 946	(+1,178)	+\$ 8.3	(+\$10.3)	+\$11.5	(+\$14.3)
Alt. 4 (OPA)	+283	(+363)	+355	(+455)	+ 9	(+12)	+ 619	(+ 793)	+ 826	(+1,058)	+\$ 7.2	(+\$ 9.3)	+\$10.0	(+\$12.9)
Alt. 5 (No Action)		(+ 80)		(+100)		(+ 3)		(+ 174)		(+ 232)		(+\$ 2.0)		(+\$ 2.8)
Alt. 6 (HD)	-106	(- 27)	-133	(- 33)	- 4	(- 1)	- 232	(- 58)	- 310	(- 77)	-\$ 2.7	(-\$ 7)	-\$ 3.8	(-\$ 9)
Alt. 7 (No Herb.)	-148	(- 68)	-185	(- 85)	- 5	(- 2)	- 323	(- 148)	- 430	(- 198)	-\$ 3.8	(-\$ 1.7)	-\$ 5.2	(-\$ 2.4)
Alt. 8 (Full eco.)	-690	(-611)	-866	(-766)	-24	(-21)	-1,509	(-1,335)	-2,012	(-1,780)	-\$17.7	(-\$15.6)	-\$24.5	(-\$21.6)
Alt. 9 (NPA)	+271	(+351)	+340	(+440)	+ 9	(+12)	+ 593	(+ 767)	+ 791	(+1,023)	+\$ 6.9	(+\$ 9.0)	+\$ 9.6	(+\$12.4)
Employment and earnings dependent on the No Action (Existing Condition) harvest level 201 (187.5) MM bd.ft./year	1,186	(1,106)	1,487	(1,388)	41	(38)	2,593	(2,419)	3,457	(3,225)	\$30.3	(\$28.3)	\$42.0	(\$39.2)
Average of all sources in county and region 1977-1980 (Tables 2-17 & 2-18)	8,500	(8,500)	35,100	(35,100)	NA	(NA)	35,000	(35,000)	246,300	(246,300)	\$493.5	(\$493.5)	\$3,073.5	(\$3,073.5)
Percent of Roseburg BLM of county and regional average 1977-1980	14.0%	(13.0%)	4.2%	(4.0%)	NA	(NA)	7.4%	(6.9%)	1.4%	(1.3%)	6.1%	(5.7%)	1.4%	(1.3%)

NA Estimates of county totals are not available.

annual receipts from public domain revenues from the district would vary from \$30,100 in Alternative 1 to \$8,700 in Alternative 8 under the FY 1981 sales average of \$260 per M bd. ft.

In comparison to a continuation of the harvest levels which prevailed from 1976 to 1980 (existing condition), Alternatives 1 through 5 and 9 all increase employment and personal earnings dependent on the harvest of timber from public lands administered by the Roseburg District. In contrast, Alternatives 6 through 8 yield lower levels. Employment and income changes related to fishing, hunting and other recreation are expected to be insignificant for the short term. In the long term, slight declines in fishing would occur in Alternatives 1-3 and slight declines in hunting would occur in all alternatives except 6 and 8. Relative to Alternative 4, Alternative 3 emphasizes current benefits at the expense of increased timber production beginning 140 years from now. See the Impacts to Vegetation, Conclusions, discussion.

Clearcutting and the use of herbicides would continue to be controversial due to concerns of some residents, particularly adjacent landowners, about ecosystem damage or health damage as opposed to the concerns of other residents for economic benefits in timber production. Alternatives calling for rates of clearcutting higher than under the existing plan would be perceived

by some persons as increasing the risk of downstream damage from flooding and washouts. Another perception of some residents is that increased timber harvest levels would decrease the level of low summer water flows. The impacts on personal and community concerns of specific actions such as timber sales and herbicide application would depend in part on the locations of the activities as well as on the manner in which BLM communicates with affected residents.

As shown in the survey cited in Table 2-27, more residents of southern Oregon favor increased timber production than favor increased hunting and fishing or wildlife habitat. Although the net impact of these concerns is difficult to assess--depending on the intensity of the concern, the knowledge of the holder and the specific alternatives being compared--it is likely that an alternative that reduced BLM timber sales would not be favored by a majority of southern Oregon residents. Concerns for economic welfare and its relation to dependency on timber harvest have undoubtedly deepened since the survey as a result of the current recession.

Conclusions

As noted in Chapter 2, the regional economy is tightly linked to wood products employment. The currently depressed levels of employment in that sector are related to demand conditions in the

Table 3-19 Projected Distribution of O&C Payments from SYUs to Counties by Alternative
(Average annual disbursements in millions of dollars, 1984-1993)

		Alt. 1 Max. Tbr.	Alt. 2 Emp. Tbr.	Alt. 3 Low MHS	Alt. 4 OPA	Alt. 5 No Action	Alt. 6 HD	Alt. 7 No Herb.	Alt. 8 Full Eco.	Alt. 9 NPA
Total O&C Disbursements¹										
Douglas County	@\$ 94/M bd. ft.	3.3	3.0	2.9	2.8	2.3	2.1	2.0	1.0	2.8
	@\$260/M bd. ft.	9.1	8.4	8.0	7.8	6.3	5.7	5.5	2.6	7.8
All Oregon Counties receiving O&C disbursements	@\$ 94/M bd. ft.	13.1	12.1	11.6	11.3	9.1	8.3	8.0	3.8	11.2
	@\$260/M bd. ft.	36.2	33.5	32.1	31.2	25.2	22.9	22.1	10.5	31.0
Change in O&C Disbursements Compared to Existing Conditions (187.5 MM bd. ft. per year)²										
Douglas County	@\$ 94/M bd. ft.	- 0.2	- 0.5	- 0.6	- 0.7	- 1.2	- 1.4	- 1.5	- 2.5	- 0.7
	@\$260/M bd. ft.	+ 5.6	+ 4.9	+ 4.5	+ 4.3	+ 2.8	+ 2.2	+ 2.0	- 0.9	+ 4.3
All Oregon Counties receiving O&C disbursements	@\$ 94/M bd. ft.	- 1.1	- 2.1	- 2.6	- 2.9	- 5.1	- 5.9	- 6.2	-10.4	- 3.0
	@\$260/M bd. ft.	+22.0	+19.3	+17.9	+17.0	+11.0	+ 8.7	+ 7.9	- 3.7	+16.8
Change in O&C Disbursements Compared to the No Action Condition (201 MM bd. ft. per year)³										
Douglas County	@\$ 94/M bd. ft.	- 0.5	- 0.8	- 0.9	- 1.0	- 1.5	- 1.7	- 1.8	- 2.8	- 1.0
	@\$260/M bd. ft.	+ 5.3	+ 4.6	+ 4.2	+ 4.0	+ 2.5	+ 1.9	+ 1.7	- 1.2	+ 4.0
All Oregon Counties receiving O&C disbursements	@\$ 94/M bd. ft.	- 2.1	- 3.1	- 3.6	- 3.9	- 6.1	- 6.9	- 7.2	-11.4	- 4.0
	@\$260/M bd. ft.	+21.0	+18.3	+16.9	+16.0	+10.0	+ 7.7	+ 6.9	- 4.7	+15.8

¹ \$94/M bd. ft. is the average value of timber sold by the District in FY 1982. \$260/M bd. ft. is the average value of timber sold by the District in FY 1981. All calculations assume that in each alternative a constant 3.6 percent of the annual harvest would be from CBWR and PD land.

² The range of projected total O&C disbursements is contrasted against the existing conditions baseline established in table 2-24, DEIS. (187.5 MM bd. ft. per year times 96.4% O&C times \$157 per M bd. ft.)

³ The range of projected total O&C disbursements is contrasted against the no action condition harvest level times the 1976-1980 average receipts per M bd. ft. (\$157) times percentage O&C harvest.

Table 3-20 Projected Distribution of Severance Taxes on CBWR Lands by Alternative
(Average Annual Disbursements in thousands of dollars, 1984-1993) ^{1,2}

	Alt. 1 Max. Tbr.	Alt. 2 Emp. Tbr.	Alt. 3 Low MHS	Alt. 4 OPA	Alt. 5 No Action	Alt. 6 HD	Alt. 7 No Herb.	Alt. 8 Full Eco.	Alt. 9 NPA
@\$ 94/M bd. ft.	44.1	40.8	39.1	38.0	30.7	28.0	26.9	12.8	37.7
@\$260/M bd. ft.	122.1	112.8	108.2	105.2	84.9	77.3	74.4	35.5	104.4
Change in Severance Tax Distribution Compared to Existing Condition (187.5 MM bd. ft. per year)									
@\$ 94/M bd. ft.	- 3.7	- 7.0	- 8.7	- 9.8	-17.1	-19.8	-20.9	-35.0	-10.1
@\$260/M bd. ft.	+74.3	+65.0	+60.4	+57.4	+37.1	+29.5	+26.6	-12.3	+56.6
Change in Severance Tax Distribution Compared to No Action Condition (201 MM bd. ft. per year)									
@\$ 94/M bd. ft.	- 7.2	-10.5	-12.2	-13.3	-20.6	-23.3	-24.4	-38.5	-13.6
@\$260/M bd. ft.	+70.8	+61.5	+56.9	+53.9	+33.6	+26.0	+23.1	-15.8	+53.1

¹ At present, the district sells approximately 5.1 MM bd. ft. of timber from CBWR lands each year. The impacts displayed in this table assume that the District will continue to obtain roughly 2.5 percent of its annual cut from CBWR lands. Property taxes paid would not vary by alternative.

² The seven tax districts in Douglas County which share the severance tax distribution are Douglas County, Umpqua Community College, Douglas Education Service District, and the Oakland, Camas Valley, Winston Dillard and Roseburg School Districts. See Table 2-21 for the distribution of taxes from CBWR lands in recent years.

national economy. Beneath today's concerns are projections for a dip in wood products production in the 1980's and 1990's due to the availability of timber. Alternatives 1 through 4 and 9 increase timber supply from the district and therefore would mitigate dips in employment projected to occur independent of actions by BLM. Alternatives 6 through 8 reduce local timber supply and would intensify the projected downturn. If timber job losses were associated with a mill closure, workers in the core work force would be unemployed. Older workers might not be able to obtain new jobs. The personal losses would be great for those individuals deprived of their functional relationship to society.

Chapter 4 Consultation and Coordination on the Draft Environmental Impact Statement



The Draft Roseburg Timber Management Environmental Impact Statement (Interior DEIS 82-27) was filed with Environmental Protection Agency and released to the public on June 22, 1982 and open to comment until August 23, 1982.

A public hearing on the draft was held August 18, 1982 in Roseburg, Oregon. Oral testimony was presented by five people in the afternoon session and by 14 people in the evening session.

A total of 95 letters were received in response to the draft environmental impact statement. These are listed in the order received in the Response to Written Comments section. Substantive comments were identified in 29 letters and they, together with responses, are printed on the following pages. Copies of all comment letters and the hearing transcripts are available for review in the Oregon State Office, 825 N.E. Multnomah Street, Portland, Oregon and Roseburg District Office, 777 N.W. Garden Valley Blvd., Roseburg, Oregon.

All letters and hearing testimony were reviewed and considered. Comments that presented new data, questioned facts on the adequacy of the impact analysis, or raised questions or issues bearing directly on the draft EIS are responded to in this final EIS. Some persons both testified orally and submitted written comments, resulting in duplication of comments. These comments are responded to in Response to Written Comments.

Several reviewers made various resource management recommendations. These recommendations, as well as all public input, will be considered before the final decision is made.

Consultation and coordination also took place with many Federal and State agencies and local governments. Most extensive were coordination efforts with the following: USFS, Umpqua National Forest, Oregon Department of Forestry, and Oregon Department of Fish and Wildlife.

Response to Comments Common Issues

Five broad issues were raised frequently by reviewers. These issues and responses to them are presented below.

Common Issue 1: Wildlife impacts largely dwell on possible long-term effects and not the period of the 10-year plan. Adequate old growth would be available after one decade not to affect populations of many wildlife species regardless of alternative.

Response: The text has been revised in the FEIS, Chapter 3, Impacts on Animals section, to include additional discussion regarding short-term impacts on wildlife.

Common Issue 2: In this economic climate how can you be certain of the indicated level of funding necessary to implement the intensive management practices? Please display a variety of funding levels for each alternative.

Response: The district's choice of a Preferred Alternative is based on factors other than funding (see Appendix A). The following table shows

Alt. 9 (NPA) at Varying Funding Levels (in thousands of dollars)

Major Program Area ¹	Full Program With		
	Full Program	No. Fert.	No. PCT or Fert.
Transportation Systems ²	\$1,683.0	\$1,599.9	\$1,422.7
Timber Management	7,120.9	6,419.5	5,414.6
Fire Management ³	525.1	499.1	443.8
Wildlife	128.0	128.0	128.0
Soil, Air, Water	100.0	100.0	100.0
Total	\$9,557.0	\$8,746.5	\$7,509.1
Allowable Cut Level MM bd. ft.	247	235	209

¹ Program areas directly related to harvesting or reforestation and growth.

² This does not include funding for bridge, road, and aggregate production projects handled through the Federal Highway Administration. Funds for these projects are held at the State Office. An additional \$500,000 is needed for these construction projects.

³ Program areas directly related to reforestation and growth.

various levels of budget and volume offered for sale for the Preferred Alternative (Alternative 9).

Common Issue 3: The DEIS does not provide sufficient detail on the level of intensive management practices proposed for each alternative. Please display this information as well as the proportion of harvest attributable to each practice.

Response: The following table displays contributions to the allowable cut associated with each intensive management practice for Alternatives 4 and 9.

Contribution to Annual Harvest

Intensive Management Practice	Alt. 4 (OPA) MM bd. ft.	Alt. 9 (NPA) MM bd. ft.
Intensive Base		
Harvest and Reforestation	183.0	183.1
Precommercial/ Commercial Thinning	26.0	26.0
Fertilization	12.2	12.2
Tree Improvement	19.1	19.1
Sub Total	240.3	240.4
Constrained Base		
Harvest and Reforestation	9.1	6.3
Total	249.4	246.7

Common Issue 4: The DEIS does not provide sufficient detail on forest production opportunities foregone by various allocations by alternative.

Response: The following table displays timber volume foregone for each EIS alternative by land use allocation category.

Timber Volume Foregone in Allocation Areas Million Board Feet Production/Year, Scribner (MM bd. ft./Yr.)

Land Use Allocation Category	EIS ALTERNATIVE								
	1	2	3	4	5	6	7	8	9
No Planned Harvest Areas									
Botanical	.5	.5	.5	.5		.5	.5	.5	.5
Cultural	.5	.5	.5	.5		.5	.5	.5	.5
Recreation	.5	.9	.9	.9	.2	1.8	.9	2.9	.9
Bald Eagle	2.5	2.5	2.5	2.5			2.5		2.3
Golden Eagle & Raptor		.5	.5	.5		1.0	.5	1.9	0.5
Old Growth Blocks						13.8		22.8	
Riparian Areas						20.5		68.0	12.2
Sub-Total Volume Foregone	4.0	4.9	4.9	4.9	.2	38.1	4.9	96.6	16.9
Constrained Harvest Areas									
VRM II					.3	10.5		21.6	
Bald Eagle						1.6		4.1	0
Northern Spotted Owl						8.0		14.0	
80-Acre Blocks						46.0		46.4	
Old Growth Blocks									
Osprey/Heron						1.1		.7	
Mid-age & Old Growth ²		3.7 ²	22.0 ²	22.0 ²		54.0	22.0 ²	60.4	22.3 ²
Riparian		10.4	10.1	10.1	.5		10.1		
Sub-Total Volume Foregone		14.1	32.1	32.1	.8	67.2	32.1	86.8	22.3
Minimum Harvest Age Constraint on Intensive Base		7.0		7.0		4.7		25.6	7.0
No Use of Herbicides, Fertilizers or Computed Genetic Gain							80.0		
Total Timber Volume Foregone	4	26	37	44	1	110	117	209	46
Allowable Cut Level	289	267	256	249	201 ¹	183	176	84	247

¹ Alternative 5 utilizes the 1970 land base, inventory and allowable cut projections.

²For these alternatives, mid-age and old growth allocations managed under modified area control includes: VRM II, Northern Spotted Owl, and osprey/heron habitat.

Common Issue 5: Several respondents reacted to data displayed in Table B-6 of the DEIS, which is shown below. Particular concern was expressed over the magnitude of the district's average management costs per acre in the first years of reforestation.

Baseline Yields, Costs and Revenues (MCF, Dollars Per Acre)

Douglas Sustained Yield Unit

Full Intensive Management Regime: Plant improved stock, precommercially thin where needed, commercially thin at ages 35 and 55, fertilize at ages 12, 35, 45, 55, 65 and final harvest at age 75.

Age of Stand	Expected Volume MCF/Acre	Diameter of Harvest	Pond Value Per MCF	Gross Revenue Per Acre	Logging Cost Per Acre	Hauling Cost Per Acre	Estimated Sales Values Per Acre	BLM Management Costs
0								557.95 Site prep., plant, protect
1								50.54 Replant, protect
2								50.54 Replant, protect
7								16.07 Release
12								137.2 Precommercially thin & fertilize
35								361.09 Commercially thin & fertilize
45								71.64 Fertilize
55								361.09 Commercially thin & fertilize
65								71.64 Fertilize
75								289.45 Final harvest
¹ 35	1,068	10.34	742.08	792.54	886.63	125.16	-219.25	
55	2,734	12.78	914.86	2501.23	1310.23	320.42	870.57	
75	9,129	20.42	1455.85	13290.46	1877.12	1069.91	10343.41	
² 35	1,068	10.34	1385.56	1479.78	886.63	125.16	467.97	
55	2,734	12.78	2440.52	6672.39	1310.23	320.42	5041.73	
75	9,129	20.42	5548.80	50655.08	1877.12	1069.91	47708.03	

South Umpqua Sustained Yield Unit

Full Intensive Management Regime: Plant improved stock, precommercially thin where needed at age 15, commercially thin at ages 45 and 65, fertilize at ages 15, 45, 55, 65, 75 and final harvest at age 85.

Age of Stand	Expected Volume MCF/Acre	Diameter of Harvest	Pond Value Per MCF	Gross Revenue Per Acre	Logging Cost Per Acre	Hauling Cost Per Acre	Estimated Sales Values Per Acre	BLM Management Costs
0								557.95 Site Prep., plant, protect
1								50.54 Replant, protect
2								50.54 Replant, protect
7								16.07 Release
12								137.2 Precommercially thin & fertilize
45								361.09 Commercially thin & fertilize
55								71.64 Fertilize
65								361.09 Commercially thin & fertilize
75								71.64 Fertilize
85								289.45 Final harvest
¹ 45	1,754	11.58	829.88	1455.62	1075.09	205.56	174.96	
65	2,108	13.74	982.83	2071.82	1035.39	247.05	789.36	
85	8,811	20.40	1454.43	12815.02	1833.44	1032.64	9948.92	
² 45	1,754	11.58	1852.12	3248.62	1075.09	205.56	1967.96	
65	2,108	13.74	3078.50	6489.49	1035.39	247.05	5207.03	
85	8,811	20.40	6626.05	58382.15	1833.44	1032.64	55516.05	

¹ Revenues and costs maintained at 1978-1980 levels.

² Timber values appreciate 1.8 percent per year faster than management costs.

Response: In the scoping process a member of the public requested that an analysis of the economic efficiency of forest management practices be made. This person also requested that the genetic yield, costs and revenues used in the analysis be displayed. Table B-6 of the DEIS summarized those data for a hypothetical average acre in the Roseburg District.

Arrayed below are the district's experienced costs by treatment, and the derived average cost per acre used to calculate the baseline figures listed in the table above. Treatment costs per acre were based on the district's contracting experience from 1978-1980. Each practice is applied only to areas needing treatment. The average cost per acre regenerated equals the cost of the treatment times the proportion of acres receiving treatment.

Age of Stand	Treatments	Roseburg District	Cost for the
		Cost per Acre ¹	Average Acre Table B-6 DEIS
0	Burning	\$189.28	161.07
	Scarification	63.64	4.86
	Paper Mulch	495.72	13.64
	Herbicide	63.18	43.30
	Initial plant	115.49	115.49
	Seed and Seeding		
	Cost	100.30	100.30
	Artificial Shading	212.62	59.33
	Protection Against		
	Big Game	269.73	42.40
	Rodents	269.73	13.79
1, 2	Livestock	74.12	3.77
	Sub Total		557.95
	Herbicide	62.08	6.96
	Protection	264.96	12.52
	Replant or Interplant	137.27	21.14
	Seed and Seedling		
	Cost	100.30	9.92
7	Sub Total		50.54
	Release	63.79	16.07

¹ Includes district planning, contract preparation and administration, overhead and contractual costs.

Response to Written Comments

Each written comment letter from individuals, organizations or agencies was assigned an index number in consecutive order as received.

Letter No.	Agency, Organization or Individual	Letter No.	Agency, Organization or Individual
1.	Rogue Valley Council of Governments	49.	Bob Flynn
2.	USDI, Bureau of Mines	50.	Ralph Saperstein
3.	1000 Friends of Oregon	51.	Joel Rosenberg
4.	Oregon State Dept. of Forestry	52.	Lloyd R. Van Doren
5.	Cheryl Kolander	53.	Ronald V. Widener
6.	L.J. Fullerton	54.	Dale Bonnell
7.	Wildlife Management Institute	55.	Gene H. Landout
8.	Riddle Laminators (17 signatures)	56.	Howard W. Johnstone
9.	Seek, Inc., Realtors	57.	Mark and Roberta Kincaid
10.	Larry D. Higbee	58.	Roseburg Lumber Co.
11.	Umpqua Chapter, Southern Oregon Resources Alliance (SORA)	59.	Mark A. Lowry
12.	Oregon Wilderness Coalition	60.	Lynda Oebel
13.	Dale S. Sawyer	61.	Chuck Kempas
14.	Rodney F. Greene	62.	The Neil Company Realtors
15.	Umpqua Valley Audubon Society	63.	John Rard
16.	Umpqua Valley Audubon Society	64.	Mrs. T.L. Suhrstedt
17.	Clifford M. Bryden	65.	James R. Fournier
18.	Gordon Thoreson	66.	Mrs. R.J. Parlik
19.	L.A. Kostur	67.	Carolee Fournier
20.	Umpqua Dairy Products Co.	68.	Douglas Timber Operators
21.	Umpqua Savings and Loan	69.	Association of O&C Counties
22.	Commercial Title Co.	70.	Ken Shrum
23.	Bohemia Inc.	71.	Western Forest Industries Association
24.	Harmony Farm	72.	Wade Mosby
25.	Western World Realty, Inc.	73.	Richard Mitchell
26.	Thomas A. Lawler	74.	USDI, Fish and Wildlife Service
27.	Wayne Peterman	75.	City of Sutherlin
28.	Lorraine Michal	76.	William E. Markham, State Representative, District 46
29.	Champion International Corp.	77.	Richard Croucher
30.	James A. Little	78.	Harold F. Anderes
31.	Glide Lumber Products Co.	79.	Floyd G. Sackett
32.	USDI, National Park Service	80.	Associated Oregon Loggers, Inc.
33.	Richard Chasm	81.	Jozef Reynaerts
34.	Douglas National Bank	82.	Corey John Bidwell
35.	Roseburg Area Chamber of Commerce	83.	North West Timber Association
36.	L.L. Burr Logging Co., Inc.	84.	William C. West
37.	Robert Dahne	85.	Oregon Dept. of Fish and Wildlife
38.	Mary Lou Goodin	86.	U.S. Environmental Protection Agency
39.	Les Sanders	87.	Ellis W. Antrim
40.	Becky Nelson	88.	Marilyn J. Smith
41.	Barbara Nelson	89.	Duane L. Smith
42.	N. Carlene and W. Rick Wilkinson	90.	USDA, Forest Service, Pacific Northwest Region
43.	Umpqua Community College	91.	Industrial Forestry Association
44.	Sun Studs, Inc.	92.	Cecil and Phyllis Hubbs
45.	Lois J. Gilbert	93.	Cameron LaFollette
46.	Stuart Richert	94.	USDC, National Oceanic and Atmospheric Administration
47.	Weyerhaeuser Company, Western Oregon Region	95.	Oregon Executive Dept., Intergovernmental Relations Division
48.	William L. Streit, M.D.		



United States Department of the Interior

BUREAU OF MINES

WESTERN FIELD OPERATIONS CENTER
EAST 360 3RD AVENUE
SPOKANE, WASHINGTON 99202

July 22, 1982

Memorandum

To: James E. Hart, District Manager, Bureau of Land Management,
Roseburg, Oregon

From: Chief, Section of Minerals Involvement

Subject: Draft Environmental Impact Statement (DEIS) for the
Roseburg Timber Management Plan

2-1 We found the statement well written except for lack of comments on mineral resources. The proposed action is not expected to adversely affect mining or mineral resource utilization in the area. However, the disclaimer on page 63, that the proposed action will not significantly affect mineral resources, should be preceded by at least a brief discussion that describes the existing mineral related activities.

The discussion of socioeconomic conditions fails to mention the strategic importance of the only operating nickel mine in the United States. This mine, the Hanna Nickel Mine located near Riddle, in Douglas County should also be described briefly because of its economic importance to the local community.

Thank you for the opportunity to review the draft statement.

D. P. Banister

Response to comments in Letter 2.

2-1 The purpose of EIS scoping is to focus only on those issues that relate to significant effects of the EIS alternatives. Analysis, including the scoping process, indicated that timber management would not significantly impact mining or future mineral resource utilization. Therefore, as stated on page 63 of the DEIS, these topics are not discussed.

1000 FRIENDS OF OREGON

400 DEKUM BUILDING, 519 S.W. THIRD AVENUE, PORTLAND, OREGON 97204 (503) 223-4396

July 19, 1982

Bureau of Land Management
Roseburg District Office
777 N.W. Garden Valley Blvd.
Roseburg, OR 97470

Re: Roseburg Timber Management DEIS

To Whom It May Concern,

I am writing to express concern over the omission of a discussion of certain recent studies by Dr. Robert R. Curry in the subsection entitled "Impacts on Soils" in Chapter 3 "Environmental Consequences" at pages 64-66.

Dr. Curry, on the faculty of the University of California, Santa Cruz, testified before Congress in 1971 that "[p]resent evidence suggests forest cutting, by any but the most conservative and careful methods appears to completely defeat the nutrient cycling and soil nutrient storage capacity, as well as increase erosion. Western forests may have less than 200 years of productive fertility remaining before permanent...eradication of productivity for saw timber production." since then Dr. Curry has refined and expanded his hypotheses and is chairing a National Academy of Science Study on its relevance to agriculture.

3-1 It is disturbing that such a fundamental issue as longterm soil productivity should be treated in such a summary fashion that Dr. Curry's work is not cited once. Soil productivity is one of the fixed limitations which should control the decisions concerning use of and investments in, our national forests.

Robert Liberty
Robert Liberty
Staff Attorney

RL/cms

Response to comments in Letter 3.

3-1 The literature includes many authors whose work has not been cited in the DEIS. Although the literature is not conclusive, recent work has shown soil productivity to be affected as indicated on page 66 of the DEIS

This issue was also addressed in the promulgation of guidelines by the 92nd Congress. Titled "Clearcutting on Federal Timberlands," Report by Subcommittee on Public Lands (commonly referred to as the Church Report), this document has been adopted by BLM as indicated on page 19 of the DEIS.



Forestry Department

OFFICE OF STATE FORESTER

2600 STATE STREET, SALEM, OREGON 97310 PHONE 378-2560

July 28, 1982

Mr. James E. Hart, District Manager
Roseburg District
Bureau of Land Management
777 NW Garden Valley Blvd.
Roseburg, Oregon 97479

Dear Mr. Hart:

The Oregon State Forestry Department has reviewed the Roseburg Timber Management Draft Environmental Impact Statement. We are pleased to note the consistency of the proposed action with the basic objectives of the Forestry Program for Oregon, especially with regard to the production of timber.

While we support the direction of the proposed action I am particularly concerned with the need to conserve the existing commercial forest land base as an essential element to offset projected timber supply shortages in this Timbershed. We would like to offer comments in four general areas including: selection of an alternative, consistency with the Forestry Program for Oregon, intensive management and the scattered ownership pattern.

I hope these comments will be useful and I trust they will be given adequate weight and consideration in the final environmental impact statement.

Sincerely,

H. Mike Miller
State Forester

HMM:jp

cc: Board of Forestry
Executive Staff
Congressional Delegation
Pat Amedeo
Tom Lane
William Leavell, BLM State Director
State Clearinghouse (PNRS #OR 820628-068-4)

Intensive Management:

4-2

In order to rank alternatives according to their consistency with the FPFO Objective to maximize growth through increased intensive management practices, the EIS should display the difference between the current level of practices that are accomplished and that proposed for each alternative. Information in the OEIS does not provide a basis by which to measure intensive management practices in a comparative manner. Table 1-2 titled Comparison of Proposed Action and Alternatives by Treatment - First Decade displays the types and levels of treatments as a comparison with the proposed action. In the process of computer modeling acres tend to be treated by percentages and because most of the land base over time is considered for treatment, backlog in needed treatments currently and combinations of treatments occurring during these projections make meaningful comparisons difficult.

In the FPFO consistency table our benchmark is to "implement a full range of intensive timber management practices for optimization of timber production". Using the information in your table this could be a comparative target number such as a percent of the CFL land base receiving basic intensive management treatments during the first decade.

4-3

To better provide a benchmark consistency target, OOF suggests that you display acres for each of the basic intensive forestry practices implemented as a percent of the CFL base projected for each decade.

We estimate that 35% of the CFL base currently receives some intensive management treatment. (Plant, Rehb. Release, PCT, CT and fertilization). The Preferred Alternative would result in about 65% treated. Alt. 1, 2 and 3 are greater than 65% and Alt. 6, 7, and 8 are less than Alternative 5 and would be inconsistent with FPFO in our opinion.

Scattered Ownership Pattern:

4-4

One issue not addressed in the OEIS is the checkerboard pattern of ownership characteristic of O & C lands. The operational problems due to this pattern affect the management programs for both commercial timber production and amenity values. It is uncertain how the objectives of programs for visual resource and wildlife habitat can be implemented with uniformity and measured objectively. This problem needs to be discussed in some details in the Environmental Impact Statement.

Oregon State Forestry Department Review of
Roseburg District Timber Management
Draft Environmental Impact Statement

During our coordination effort, the Forestry Department has raised a number of issues at various input stages in the planning process. Some of these concerns have been resolved, however we are interested in further discussion of the following issues in the EIS.

Selection of an Alternative:

Generally we support the direction of the preferred alternative since it provides a harvest level and proposed management program comparable to the "Objective" level identified in the 1980 Timber Supply Assessment for the Roseburg Timbershed. In brief, the Assessment points out that while BLM is presently harvesting timber at a reasonably attainable level in western Oregon, overall harvest levels in most timbersheds are expected to decline. BLM could help alleviate this potential shortfall by increasing its present harvest by an average of 7% in western Oregon.

Consistency with FPFO:

It is the Board of Forestry's policy to promote a statewide Forestry Program for Oregon which meets certain objectives: maintain the existing commercial forest land base, maintain or increase the annual allowable harvest, utilize a full range of intensive management practices, and maintain community stability.

Forestry has encouraged the BLM to be consistent where possible, with these State objectives.

4-1

A table showing BLM harvest projections from the 1980 Assessment were provided your office in a memorandum dated July 19, 1982. We would like to incorporate these harvest levels into the consistency table as a benchmark for comparison of community stability.

The reasonably attainable harvests for the Roseburg District would be:

	1980	1990	2000	2010	2020
MMCF	40.3	39.5	39.2	38.8	38.7
MMBF	198.0	189.0	199.3	191.7	168.0

As you note, the harvests projected are not constrained by an artificial limitation such as non-declining even flow, but are in accord with the principle of sustained yield.

Additionally, we feel some limited opportunities exist to increase this harvest level in some timbersheds from a "surplus inventory" or as a "cooperative harvest" target. This increased harvest is intended to make up for the "fall down" expected in some timbersheds to ease community transition to a sustained harvest from all owners.

Response to comments in Letter 4

4-1 FPFO forest harvest levels for the 1980 decade have been incorporated by text revision (see FEIS Chapter 1 State and Local Governments under Interrelationships section).

In addition, FPFO harvest levels for decades 1980 - 2070 are shown below. Volumes in MM bd. ft. were converted from 32-foot to 16-foot log rule for direct comparison throughout the EIS.

BLM Harvest Projections - 1980 TSA

(MMCF & MMBF/Yr)¹

Decade

BLM Unit	1980	1990	2000	2010	2020	2030	2040	2050	2060	2070
Roseburg										
MMCF	40.3	39.5	39.2	38.8	38.7	38.2	37.7	37.2	37.0	36.7
MMBF	245.4	235.4	247.1	237.7	208.3	160.8	141.6	161.3	168.7	167.2

¹Harvest in each decade sustainable for seven additional decades in cubic feet (incremental even-flow). Harvest in board feet is based on 16-foot logs, Scribner Log Rule. Converted by D. Preston (OSD) 8/4/82 from OOSD original submission

- 4-2 The following tables show Roseburg District management practices accomplished under the old plan compared with the new one.

Reforestation Practices

Practice	Ac. Accomplished (1972-1981)*	Ac. Planned Alternative 4**	Ac. Planned Alternative 9**
Site Preparation	31,866	103,010	102,197
Planting	70,544	68,572	68,027
Protection	2,289	31,076	30,830
Plantation Maintenance & Release	9,365	40,284	39,965

Intensive Management Practices

Practice	Ac. Accomplished (1972-1981)*	Ac. Planned Alternative 4**	Ac. Planned Alternative 9**
Precomm. Thinning	14,345	40,755	40,449
Comm. Thinning	1,319	3,479	1,383
Fertilization	3,034	56,029	55,646
Tree Improvement	0	15,200	15,200
Brushfield Conv.	146	0	0
Mortality Salvage	24,964	3,347	3,328

*From Roseburg District Young Growth Management Committee Report

**From EIS, Table 1-2

- 4-3 The acres for each intensive management practice planned for the first decade are shown in DEIS, Table 1-2. On the commercial forest land base 92.5 percent of the intensive management acres harvested in the first decade will receive spacing control and fertilization. Planting with genetically improved stock will also occur on approximately 30 percent of the acres harvested in the first decade. This would increase to approximately 92.5 percent by the fourth decade.

Other harvested acres would not be subject to intensive timber management practices that are yield enhancing.

By the fifth decade all intensive management practices would be scheduled at maximum levels. The percentage of commercial forest land scheduled for each intensive management practice is shown below:

Percent Commercial Forest Land Base*
Scheduled for Intensive Management
(Fifth Decade and Beyond)
EIS Alternative

Intensive Mgt. Practice	1	2	3	4	5	6	7	8	9
Spacing Control	91	85	79	79	23	53	37	0	78
(Pre. Comm. & Comm. Thinning)									
Fertilization	91	85	79	79	0	53	0	0	78
Tree Improvement	91	85	79	79	73	53	68	0	78

*Percent scheduled by practice (Commercial Forest Land Base 391,070 acres)

- 4-4 As noted on page 82 of the DEIS, BLM recognizes the "ability to affect an area's overall scenic quality is often limited by intermingled ownership patterns."

The allocations for wildlife under the various alternatives also recognize the intermingled ownership.

It is not the intent of BLM to control or influence private land management decisions, nor do the preferred or any of the other alternatives imply such control or influence.

PUBLIC COMMENT OF THE ROSEBURG DISTRICT
DRAFT E.I.S.

275 North Myrtle
Myrtle Creek, Oregon 97457
August 10, 1982

5

5-1

This E.I.S. does not discuss Timber Management options, but rather, a Land Use Plan. Timber Management alternatives must be discussed. In specific, the alternative methods of timber harvest: various methods of selective harvest including shelter-wooding, strip clear cutting going with the contour of the land, and selective cutting of only the fully mature trees.

Also, alternative methods of yarding require enumeration and analysis. Specifically: full-suspension yarding (skylining), and horse logging on appropriate sites.

This discussion must include the different effects such practices will have on recreation, wildlife, and especially, watershed and long term soil productivity.

5-2

There is an apparent error in that the North Myrtle Research Natural Area should be 480 Acres, not 240 Acres. This is the acreage recommended by the Research Natural Area Committee. If it is to be reduced to only half the recommended size, and this to a size below the 300 acre minimum generally required of RNA's, then an explanation must be part of the E.I.S. justifying this substantial reduction.

5-3

There are no mitigating measures included in the E.I.S. for the assessed negative impacts of the Preferred Alternative. Impacts to wildlife, watershed, long term productivity, recreation, etc., must have clear mitigating measures delineated in the E.I.S. This is pursuant to NEPA process as given in 43 CFR.

If no mitigation measures are clearly delineated, then the impacts are too severe to allow justification of the Preferred Alternative, given all applicable conservation laws.

In the case no mitigating measures are to be delineated and adopted, a justification of this must be made. And, according to 43 CFR, a worst case scenario must be developed and exposed for public scrutiny.

Cheryl Kolender
Cheryl Kolender

Response to comments in Letter 5.

5-1 The public scoping process that preceded development of the DEIS identified the issues addressed in the EIS alternatives as the most important and relevant for analysis. The EIS does address several different timber management options, including: no herbicides, no fertilizer and smaller minimum harvest size. Specific management practices, including various harvest methods, are described in the BLM Timber Management Final EIS 1975, which is incorporated by reference. Alternative harvest methods are considered on a site by site basis, utilizing the appropriate method to mitigate a potential impact.

5-2 The North Myrtle proposed RNA acreage is correct as shown in the DEIS (Table 2-14). The Proposed RNA was reduced to approximately 240 acres in the Original Proposed Action (Alt. 4). This protects an area sufficient to meet RNA cell needs and sensitive plant habitat, while leaving the remainder open to other management activities. There are no minimums established for RNA size; some RNAs are 80 acres or less. Note: the entire 480-acre parcel is part of a seral stage block in the new Preferred Alternative (Alt. 9).

5-3 In the EIS, Chapter 1 references the BLM Timber Management Final EIS 1975, which includes a detailed listing of mitigating measures. Chapter 1 also describes project design features which represent mitigating measures feasible to implement without changing an alternative or impacting the allowable cut associated with a particular alternative. Additional means to mitigate adverse environmental impacts are discussed in Chapter 3.

7



Wildlife Management Institute

709 Wire Building, 1000 Vermont Ave., N.W., Washington, D.C. 20005 • 202/347-1774

DANIEL A. POOLE
President
L. R. JAHN
Vice-President
L. L. WILLIAMSON
Secretary
JACK S. PARKER
Board Chairman

August 12, 1982

Mr. James E. Hart
District Manager
Roseburg District Office
Bureau of Land Management
777 NW Garden Valley Boulevard
Roseburg, Oregon 97470

Dear Mr. Hart:

The Wildlife Management Institute submits its comments on ROSEBURG TIMBER MANAGEMENT ENVIRONMENTAL IMPACT STATEMENT, Oregon. We usually would say we are pleased to submit comments, but this time it is a sad occasion.

Your plan is good, probably about the best that could be expected from the lands in the Roseburg District. It is not quite as good for wildlife as the Coos-Curry plan. However, both have now gone down the tube--negating the many years work to bring O&C lands under some kind of multiple use.

We are referring to the July 15 memo from the Director. The third paragraph throws out Sikes Act and other agreements with the state and other agencies on spotted owls as "interim." It says in part "Habitat through land use allocation in these instances on O&C lands will be provided only to the extent it comes from noncommercial timber lands."

This is done at a time when, in the real world, some purchased timber has stood uncut for over 3 years, sales are down and some timber offerings are not being sold.

Several years ago a humorous sheet was circulated in Oregon giving a recipe for Roasted Spotted Owl. That may no longer be a joke since July 15.

We see no reason to make our usual detailed analysis of the plan, as it will be completely changed by the time the final EIS is prepared.

We do wish to call your attention to one important fact, however. The 423,896 BLM-administered acres contain tracts of Public Domain. This land is subject to FLPMA. We insist it be managed for multiple uses--and in this case we define those uses as old growth since somewhere in the O&C mosaic there should be a tree older than rotation age.

Mr. James E. Hart

-2-

August 12, 1982

Perhaps the great need is to repeal the O&C Act, removing the boondoggle Oregon counties receive of 75 percent of the long time average \$300,000,000 a year from timber sales. This diversion of federal funds still occurs at a time when our government proposes selling public lands to retire the national debt. The government does not seem worried about subsidies to Western Oregon counties or to the livestock graziers of the West.

We view this action as short sighted and a detriment to long-term management of O&C lands. This reversal to single use management will draw attention to the basic inequities of the O&C Act and hopefully will result in its amendment or repeal.

These remarks have been coordinated with William B. Morse, the Institute's Western Representative.

Sincerely,

Daniel A. Poole
Daniel A. Poole
President

DAP:lbb

Response to comments in Letter 7.

7-1 The Bureau agrees that management of Public Domain (PD) lands is governed by FLPMA. The Preferred Alternative and most other alternatives would provide for management of the Public Domain (PD) lands under multiple use concepts. Due to the small amount of these lands, a BLM analysis showed they cannot by themselves satisfy old growth management objectives for wildlife habitat. The PD lands in western Oregon are combined with O&C lands for allowable cut calculation purposes.

August 12, 1982

Mr. James Hart
District Manager
Roseburg District BLM
777 N.W. Garden Valley Blvd.
Roseburg OR 97470

Dear Jim:

The Umpqua Chapter of the Southern Oregon Resources Alliance is pleased to continue its participation in the planning and management activities of the District by submitting our comments on draft EIS for the new Timber Management Plan.

The goal of our organization is to seek out a balance in resource issues that provides economic stability for Douglas County, while providing the protection of the environment so key to maintaining the quality of life we all enjoy. Our membership and our Board of Directors represents a cross-section of the community from those with strong resource utilization interests, to those with strong concern for recreation and environmental concerns. Contrary to our friends in either the local environmental groups or the timber industry, we are not single-use or objective oriented. Furthermore, unlike some local advocate groups, we are aware of the differences in purpose between BLM and Forest Service management. Indeed, we believe our organization represents the "community" that the O&C act referred to when it discussed providing for economic stability, watershed management, and recreational opportunity.

In reviewing the activities leading up to the draft EIS at our August 5th board meeting, one factor became quite clear. You and your staff have done an outstanding job of listening to the public concerns and have demonstrated a sincere concern for the needs and desires of the majority of the local population. The dedication and professionalism demonstrated by you and your staff is most appreciated by our organization.

In reviewing the EIS and recent planning criteria established by the Bureau, it would appear that our input is needed in two areas:

I. Contrary to other planning efforts, the proposed action can be changed in the final EIS to reflect Bureau laws and policy leading to the actual decision. Input should therefore deal with what our organization believes the proposed action should be in the final EIS.

II. The adequacy of the EIS in terms of properly displaying the environmental and human effects of various alternatives.

During the Boards review of the EIS, it became clear that we, as lay members of the public, cannot evaluate such technical items as harvest prescriptions, road design, environmental mitigation or fish and wildlife enhancement techniques. Rather, we must examine such documents from the vantage point of outputs and how well they meet our criteria for recreational opportunity, water quality, wildlife populations, compliance with the O&C mandate, and economic stability in terms of jobs and public revenues.

We had expected that the timber industry would be pushing for a full, intensive timber management option such as described by Alternative One. We were somewhat surprised when the industry asked that SORA consider joining with the industry in supporting Alternative 2. We cannot give the alternative our unqualified support because the EIS does not fully disclose the environmental effects or the probability of implementation of the alternative. Following discussion and review, the following position for SORA was unanimously adopted:

"THE UMPQUA CHAPTER OF SORA URGES THAT THE BLM ADOPT ALTERNATIVE 2 AS THE PROPOSED ACTION IN THE FINAL EIS, AND URGES ITS IMPLEMENTATION AS THE DECISION, PROVIDED THE FINAL EIS DEMONSTRATES THAT SORA'S OBJECTIVES IN THE AREAS OF WILDLIFE, WATER QUALITY, RECREATIONAL OPPORTUNITY, OLD GROWTH AND ECONOMIC FACTORS ARE INDEED MET BY THE ALTERNATIVE."

Following are brief discussions in areas of concern to SORA along with our recommendations for changes in the analysis in the final EIS.

11-1 NORTH UMPQUA RIVER-Our organization is particularly concerned that your management of the river maintain the aesthetic beauty of the area, as well as provide for accommodating increased recreational pressure on the area. Because it is such a sensitive area, it deserves specific discussion in the EIS including opportunities for increased day and overnight use facilities, increased river crossings for foot traffic, and increased road access in the area of the once proposed Bob Butte road. We would also like to see the maintenance and improvement of the North Umpqua Trail receive a high priority.

11-2 RECREATION-The proposed action should provide for maximum recreational opportunity that is compatible with timber management. This should include dispersed camping opportunities, trail systems in the managed forest, visual management consideration in sale scheduling and layout, as well as providing for future expansion of your fine developed recreation sites across the district.

11-3 AREAS OF CRITICAL ENVIRONMENTAL CONCERN AND RESEARCH-NATURAL AREAS-It appears that the ACEC's decisions will be made as part of this planning effort, yet the EIS fails to give specific descriptions of the areas that would be included, why they are included, or how they would be managed.

11-3 The public should be given the opportunity to comment on specific areas. We are concerned that some areas, such as Slide Over, may be more political in nature than based on demonstrated need, or the area's attributes, when compared to other potential areas in the state.

11-4 RIPARIAN AREAS AND WATER QUALITY-It would appear that with the allocation of over 18,000 acres of streamside units, that water and fisheries' values are well provided for in Alternative 2. In addition, the EIS should analyze how these areas can best be managed to provide for old growth and other wildlife needs.

11-5 WILDLIFE-We recognize that as the composition of the forest changes from predominately old growth to a managed forest, there will be changes in the wildlife populations. However, there will still be an abundant population of wildlife for the public to enjoy. This concept has not been adequately discussed or described in the EIS. Considering the unique nature of O&C lands, we do not think it necessary that every species now found on BLM land must always be found on BLM lands so long as they can be found somewhere in the region. With the Riparian zones and other areas that will not be managed intensively for timber, this is not a serious concern.

11-6 It was pointed out in an earlier planning document that it will be several decades before any wildlife population will be significantly impacted. We think this concept should be carried forward into the final EIS.

11-7 OLD GROWTH AND THE SPOTTED OWL-SORA appreciates the values of old growth and the apparent uniqueness of the spotted owl. It has also become abundantly clear in recent months that a great deal of study and research is needed on the subject. While the EIS indicates the spotted owl will be gone from the district in a hundred years, the arguments are not at all convincing. We think that opportunities to manage for the owl without the large habitat allocation must be examined. Clearly on this district time is not a critical issue since it will be so long before the major portion of the old growth is scheduled for harvest.

11-8 Your EIS should show the public how many of the owls you can protect for the first ten years as well as for future decades under each alternative by carefully scheduling your timber sales. It would appear that we have several decades in which to determine a proper old growth policy on the district. In the meantime, the Forest Service will develop its local plans and the researchers can provide the answers to the many questions. The EIS should deal with total old growth on the district, not just the commercial forest lands.

11-9 TIMBER SUPPLY AND LOCAL ECONOMIC STABILITY-It is clear at this point that some significant increases in the even flow sustained yield are possible from the Roseburg BLM. For this we are thankful, as our industry will need the timber and our community will need the jobs once the current national economic climate improves. It is our understanding from the EIS that actual harvest levels will fluctuate depending upon the funding levels approved by Congress and the price of timber. It also appears that in order

to reach the level of harvest shown in the plan you will need big increases in funding. We find this very unlikely in the next few years. While we support your efforts at intensive forestry, we are concerned that the proposed alternative must be affordable. Therefore, we would ask that the final EIS display the harvest level for each alternative at several levels of funding (current, 10% higher or lower, 15% higher or lower, etc.).

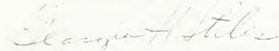
11-10

As you know, a timber shortage is predicted for this region in the next thirty years or so. While you discuss the Forestry Plan for Oregon, we feel a more detailed discussion of BLM opportunities to help protect the shortage should be discussed in your final EIS.

11-11

CONCLUSION-Based on the information available, SORA is pleased to support Alternative 2. It will provide for affordable increases in harvest which will provide a favorable climate for increased employment and economic recovery while protecting the environment and preserving the quality of life in Douglas County. Options for future old growth allocations will remain in place until future plans are developed and better knowledge is available upon which to make rational decisions. We urge that you use Alternative 2 as the proposed action in the final EIS so that we may more fully analyze its effects in the decision process.

On behalf of the Board of Directors,



Georgia H. Stiles
President

swb

cc: Bill Leavell, State Director
Bob Burford, Director BLM
SORA Board of Directors

11-1 The North Umpqua River is discussed on pages 48, 53, and 84 of the DEIS. Specific development opportunities will be addressed in subsequent detailed management plans and environmental assessments.

11-2 Recreation facilities and opportunities are described on pages 47-50, 80-85 and 126 of the DEIS. Additional details are available at the Roseburg District Office.

11-3 USDI, BLM 1980a (see References Cited) contains general policy and guidelines for ACECs. Further information, including the proposed Management Framework Plan (MFP), an ACEC identification summary and ACEC plan element, is available in the Roseburg District Office. The identification summary documents the criteria evaluation, staff analysis and public participation for nominated and proposed ACECs. The ACEC plan element provides a specific description, management objectives and special management requirements for all proposed ACECs. Details were published in Roseburg District Planning Newsletters 9, 10, 11 and in Brochures on Draft and Preferred Land Use Alternatives. The public was given opportunity to nominate areas and comment on potential areas through the response to land use alternatives from the above listed brochures. Following designation, activity plans are prepared to translate management requirements into on-the-ground implementation actions.

11-4 All EIS alternatives, except Alternative 1, provide an allocation for riparian habitat. Although this habitat meets many wildlife needs, Lang (1980) states that narrow riparian strips containing old growth trees do not constitute old growth ecosystems because of the lack of an old growth microclimate. As a result, opportunities to provide the needs of old growth dependent wildlife species through riparian habitats are quite limited.

11-9 The DEIS analysis, including Table 3-9 and Appendices E and F, addresses all old growth within and outside the commercial forest land base. Withdrawn areas and non-intensive commercial forest land have been used to satisfy a variety of resource uses, including eagle habitat, riparian areas, owl habitat, scenic values, etc.

11-5 Refer to DEIS, Chapter 3, Impacts on Animals section, pages 72-77. Also, see response to common issue 1.

11-10 See response to common issue 2.

11-6 See response to common issue 1.

11-11 See response to comment 4-1.

11-7 The EIS analysis focused on short- and long-term impacts to the spotted owl based upon current information. Refer to Chapter 3, Impacts on Animals, Threatened and Endangered Animals and Conclusions sections. Also, see response to comment 83-6.

11-8 For the first ten years, under original Task Force guidelines, at least 25 pairs of owls would be expected to remain under the Preferred Alternative (Alt. 9) as a result of land use allocations and harvest scheduling. To assess the effect of timber harvest actions on spotted owl populations at the end of each decade for each alternative, it would be necessary to have detailed long-term timber sale plans. Since this has not been done, the issue cannot be adequately assessed. Refer to Chapter 1, Table 1-5 and Chapter 3, Impacts on Animals, Conclusions section.



Oregon Wilderness Coalition

Main Office, 271 West 12th Avenue, Eugene, Oregon 97401 (503) 344-0675
 Metro Office, Dekum Building, 519 SW 3rd Avenue, Suite 706, Portland,
 Oregon 97204 (503) 224-0201
 Eastern Oregon Field Office, Box 9, Prairie City, Oregon 97869 (503) 820-3714

12

101

Response to comments in Letter 12.

12-1 Under Council on Environmental Quality regulations (40 CFR 1502.14(a)), an EIS must consider a range of reasonable alternatives. Many reasonable alternatives may be inconsistent with current agency policy. The possibility always exists that the EIS analysis can lead to revision of policy.

12-1

[Handwritten signature]

We are not so poor we must destroy our wilderness, nor so rich we can afford to. — NEWTON DRURY

15



Umpqua Valley Audubon Society

P.O. Box 381, Roseburg, OR 97470

August 18, 1982

Mr. James Hart, District Manager
 Bureau of Land Management
 777 N.W. Garden Valley Blvd.
 Roseburg, Oregon 97470

Dear Mr. Hart:

Enclosed are our organization's comments on the Roseburg Timber Management Environmental Impact Statement issued in June of 1982. This letter will supplement the comments made in the 15-page document signed by our board of directors. We were impressed with the work that went into the draft statement and felt that a relatively thorough job was done detailing many of the environmental impacts which would result from the various alternatives. I would especially like to thank some of your staff for the time that they spent with me answering questions that I had about the statement. Bob Alberts, Dick Norland and Dave Palmer all took time from their schedules to meet with me and I certainly appreciated it.

Socio-economic Impacts

The analysis of the economic impacts of the various alternatives is inadequate. This part of the impact statement is critical because all of the degrading of the environment that occurs in alternatives 1 through 5 is being done basically in the name of economics and community stability. An adequate decision cannot be made unless the economic analysis is adequate.

15-1 1) The statement determines the existing situation to be 187.5 MM bd. Ft. This average is obtained by considering the years 1976 through 1980. The analysis should include the last 10 years rather than the last five. In addition it should include the figures for fiscal year 1981.

15-2 2) The average 12-month harvest should be determined using a number of different years. If the existing situation were based on the average harvest for the last three years, i.e. 1979, 1980 and 1981, dramatically different results would occur. For example, the average 12-month harvest for 1979, 1980 and 1981 is 159 MM bd. Ft. Using this figure as the existing situation, all of the alternatives

Mr. James Hart
 August 18, 1982
 Page 2

15-2 except for alternative 8 would result in an increase in timber harvesting and alternative 6 would increase the number of jobs in the local economy by approximately 400.

15-3 3) On page 87 it is stated that the economic projections assume that under each alternative the timber is promptly harvested and processed. The statement should include information on the current situation. For example, if there is a backlog of timber that has been sold but not harvested, that information should be available to the public and the decision maker.

15-4 4) The statement should analyze whether the timber market can support the increased harvesting that is projected by some of the alternatives. It should analyze the impact that a rapid conversion of public old growth timber will have on the timber market. It should attempt to analyze whether a reserve of old growth timber will have a stabilizing influence on timber prices and whether a rapid conversion of old growth timber would result in a substantial increase in the value of privately owned timber.

15-5 5) Because one of the main objectives of the O & C lands is to stabilize local economies, the statement should analyze the apparent trend towards diversification that is occurring in Douglas County. It appears to be the goal of most policy makers in Douglas County to diversify the economy so that the swings in the housing market caused by national recessions will not result in such dramatic increases in unemployment in Douglas County. If some of the alternatives would result in the forest industry increasing its percentage of the market place in Douglas County, a federal bureau could actually be working against local economical stability.

Water Quality

15-6 1) There appears to be no statement of the actual State and Federal quality standards which must be met in the sustained yield unit. This information should be included in the statement.

15-7 2) On page 68 it is concluded that substantial increases in nutrient concentrations following forest fertilizations are not expected. No sources are given for that conclusion. It certainly seems that with the amount of research that has been done in agricultural fertilization, there must be some research available to indicate whether stream concentrations will increase or stay the same following fertilization.

Soils

15-8 1) We don't understand why the withdrawals for fragile sites is so much smaller than the inventoried fragile soils. Table C-2

Mr. James Hart
August 18, 1982
Page 3

15-8 on page 125 indicates that each alternative would withdraw approximately 2600 acres for fragile sites. Table 2-14 on page 34 seems to indicate that there are approximately 9,000 acres of fragile soils.

15-9 2) The analysis of the impact of the loss of soil due to intensive timber management is inadequate. The statement should clearly analyze the amount of top soil that is being lost from the forest under each alternative, the amount of top soil that would be added to the forest under each alternative and it should project whether those top soil losses can go on indefinitely without affecting the long-term productivity of the sustained yield unit.

Vegetation

15-10 1) The statement should indicate the impact that the various alternatives will have on the present species composition of the sustained yield unit. I presume that in many places in the forest mixed stands will be replaced by single species and the statement should analyze whether this will vary under different alternatives.

2) If the change in species composition results in conversion of a mixed forest to a monoculture, the statement should analyze the environmental impacts of that change.

Miscellaneous

15-11 1) Some of the Roseburg district lands are public domain lands which apparently should be managed under The Federal Land Policy and Management Act of 1976. These lands should be clearly identified in the statement and the alternatives should assess the impact that different legal restraints will have on that land.

15-12 2) It appears that some of the alternatives may violate State and Federal water quality standards. If they do, we believe it is inappropriate for these alternatives to be considered because they are not alternatives that could be implemented.

15-13 3) The statement should indicate the amount of merchantable timber that is being added to the sustained yield unit annually at the present time.

15-14 4) The statement should indicate what portion of the projected harvest under the preferred alternative is due to projections for genetically improved trees, what portion is due to precommercial thinning and commercial thinning, and what portion is due to fertilization.

15-15 5) Executive Order 11990 and 11880 directs Federal agencies

Mr. James Hart
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15-15 to assess the environmental impacts of their activities on flood plains and wet lands. We were not able to find any information concerning the identification of those lands or any assessment of the impact of the alternatives on those lands.

At this time we do not expect to be submitting any oral statements at the public meeting.

Sincerely,

James A. Arneson
James A. Arneson
Conservation Committee Chairman

Response to comments in Letter 15.

15-1 The average 12-month sales from the Roseburg District from 1972 through 1981 was 200.2 MM bd. ft. The average 12-month harvest from the Roseburg District from 1972 through 1981 was 194.9 MM bd. ft. Fluctuations of over 25 percent above or below the allowable cut are not uncommon in tracing the annual harvest through the past decade.

15-3 Timber sold but unharvested in the Roseburg District, as of March 31, 1983, was 616.9 MM bd. ft.

15-4 A number of studies which include estimates of the price-quantity relationship for lumber and wood products at the national level or the derived price-quantity relationship for stumpage from public ownerships in the Pacific Northwest are available (Haynes 1977; Adams et al. 1977; Adams 1977; Haynes and Adams 1979; Youngday and Fight 1979; Adams and Haynes 1980; and Haynes et al. 1981). All of these studies suggest that changes in supply of timber of the magnitude of the alternatives in the DEIS will have no effect on the market clearing prices of stumpage or manufactured wood products.

15-5 Pages 54-55 and Tables 2-17 and 2-18 of the DEIS discuss and display recent trends in economic diversification within Douglas County. Because timber industry jobs support jobs in other sectors (service, retail trade, non-wood manufacturing, etc.), an increase in the number of timber dependent jobs would increase the percentage of

total employment provided by the wood products sector by less than 1 percent. For example Table 2-17 reports lumber and wood products employment in Douglas County (1977-1980 avg.) of 8,500 and total employment of 35,000. Under the no action baseline (Table 3-18), Alternative 1 could add 537 jobs in the timber industry with total employment increasing by 1,135. During 1977 through 1980 timber industry jobs represented 24.3 percent of total employment in Douglas County. Under Alternative 1, timber industry jobs would represent 25.0 percent of total employment in the county.

15-6 The State of Oregon has determined that the requirements of the Forest Practices Act meet the objectives of State and Federal water quality standards. (Refer to ORS 340; copies are available at Oregon Dept. of Environmental Quality and BLM offices.)

15-7 The text has been revised in the FEIS, Chapter 3, Impacts on Water Resources, Water Quality section.

15-8 The withdrawals for fragile sites are part of the TPOC inventory and do not coincide with the soil inventory which included fragile soil areas (see DEIS, Appendix C, page 123).

15-9 There is no known research which quantifies loss of forest productivity resulting from incremental losses of topsoil.



Umpqua Valley Audubon Society

P.O. Box 381, Roseburg, OR 97470

August 18, 1982

Mr. James Hart, District Manager
Bureau of Land Management
777 N.W. Garden Valley Blvd.
Roseburg, Oregon 97470

Dear Mr. Hart,

The following is our comment on the June 1982 Draft Roseburg
Timber Management Environmental Impact Statement.

The Timber Management EIS is inadequate in giving a balanced range of alternatives. Alternatives 1 through 7 proposes to harvest between 289 to 176 MMBF per year vs. Alternative 8's 84 MMBF. Alternatives 1 thru 5 are totally unacceptable from an ecological standpoint to maintain forest diversity. While the prescriptions proposed in Alternatives 6 and 7 are not quite as far out of line, wildlife and watersheds would only fair slightly better. Our claim is evidenced from statements in the DEIS such as:

(a) Cavity nesters are predicted to "fall below self-sustaining levels" in all but alternatives 6, 7 and 8 and "snag dependent wildlife would be greatly reduced in the long term";

(b) "Planned timber harvest would so alter cover composition that elk populations are expected to decline over time in all alternatives except 8." And, "there are no long term provisions for retaining mature or old growth forest beyond the fourth decade for survival cover in this important area and this absence could cause population declines to proceed faster if severe weather occurred";

(c) Alternative 6, and not the preferred alternative, is the only option outside of Alternative 8, that would provide habitat for 25 or more pairs of spotted owls as recommended by the Oregon Endangered Species Task Force under the previous 300 acre prescription. And only Alternative 8 would provide a genetically viable population under the more recently suggested 1000 acre prescription.

We feel that Alternative 7, the No Herbicide, No Fertilizer Alternative, serves to further accentuate BLM's bias that forestry without herbicides doesn't work, rather than trying to look for methods that would generate some additional employment and would provide us with a healthy, poison free environment.

-2-

-3-

16-1

The No Herbicide Alternative does not sufficiently address the specific assumptions that allows the BLM to take allowable cut credit for the use of herbicides. Manual release methods are not fully discussed for which allowable cut credit should also be received.

We feel strongly that Alternatives 1 through 7 provide a skewed range of alternatives, shifted heavily to the side of maximum commodity production. Yet BLM seemingly expects Alternative 8 to provide a balanced "extreme" to Alternative 1. Alternative 1 proposes to harvest 289 MMBF per year. The September 1981 Preferred Land Use Alternative document maintains that the district only has the potential to produce 276 MMBF per year. Similarly the DEIS preferred alternative's annual cut of 249 MMBF has been increased from September 1981 preferred alternative's recommended harvest of 232 MMBF. Are these both suppose to be the same preferred alternative? Again, the cut has been skewed to one direction with both Alternatives 1 and 2 proposing harvest in excess of the prescoping meeting's maximum timber harvest, Alternative A, which proposed 266 MMBF. While the preferred alternative was increased by 14 MMBF and the maximum timber harvest alternative increased by 23 MMBF, Alternative 7 is only 3 MMBF below the former Alternative C, and Alternative 8 is only 5 MMBF below what was formerly called D.

We realize that the various alternatives are for purposes of discussion and the number of assorted "timber first" proposals doesn't necessarily insure that Alternative 8 will not be fairly evaluated. However, if a "travel agent" were to open his briefcase and present you with seven enticing vacation packages, all in seven states east of the Mississippi River, but also happened to have a trip to Colorado--although you may leaf through all the pages of the travel brochures, no one really expects that the odds are you are going to choose Colorado. If however, the travel agent wished to be sure that the western part of the country was equally well represented in your potential travel plans, it would behoove him to then also have a few brochures from Utah, Montana or Wyoming.

Similarly, we would like to see a few alternatives in your draft EIS package other than really only one that's on our side of the river. If, for the analogy, Alternative 8 is to the "west" and Alternatives 1,2,3 etc. are to the "east", you have to admit that if Alternatives 6 and 7 are "west" at all, then they're still dripping on the shore where they just barely got across the river!

Furthermore, Alternative 8 isn't nearly as far "west" as Alternatives 1,2,3,4, and 5 are "east". If you are going to have 5 alternatives all in excess of 200 MMBF, then you can consider a few other alternatives less than 100 MMBF. If you wish to have an alternative, such as number 1, which by your own admission is 13 MMBF above your potential to produce, then an analysis of the ecological impacts on

16-3

elk and cavity nesters by only harvesting 50 MMBF, 25 MMBF, or 0 MMBF should also be considered. Alternative 8 would basically only allow one population of elk (in the Tyee area) to hold its own, according to the draft EIS. Let's consider an alternative that would maximize elk, spotted owls, bald eagles, cavity nesters and anadromous fish in all areas of the forest. Only this type of alternative would properly balance Alternatives 1 thru 5. In other words it's O.K. if your travel agent wants to offer dream trips to Bangor, Maine, but let's also have a trip to San Diego, California. Alternative 8 doesn't get past Denver, Colorado.

16-4

The "new" preferred alternative increases timber harvesting by 48 MMBF over the current annual allowable cut level. To harvest this timber, four intensive management practices are employed--spacing control in young stands, commercial thinning, fertilization, and planting of genetically improved trees. To insure that future timber management policies and practices do in fact "contribute to the economic stability of local communities" as set forth in the O&C Act, we ask that the FEIS fully analyze, and present documented evidence that will demonstrate the feasibility, and explain the degree of probability of success, before intensive management methods as described are employed any more extensively.

16-5

Given a favorable market, it is obvious that accelerated timber harvest can produce a local economic "boom". We wish the FEIS to offer firm evidence that such accelerated harvest as proposed in the preferred alternative, will not eventually result in economic "bust". Our concern is, that in meeting the immediate timber demands of this decade that both our economic and natural environments are not "short changed" in future decades.

In a public appearance last year, U.S. Forest Service Regional Forester, Richard Worthington remarked that certain Scandinavian countries are facing severe timber shortages due to major miscalculations in their allowable cuts. Our total future timber supplies should not be predicated on the assumed accuracy of allowable cut calculations and high risk intensive management techniques, if the failure of any one of these techniques could leave us with an economy below our minimal level of "stability".

Conservative, yet sound economic advice, is to never invest more than you can afford to lose. High risk investments often offer the potential of paying the greatest dividends. But if an investor's "sure thing" stocks should go "belly-up" due to unforeseen complications, then having a remaining nest egg safely tucked away in some low interest paying bank or S&L provides a basic level of security.

Our old growth forests are such a nest egg. It is no wiser to gamble on our future by liquidating vast quantities of old growth in the next decade for the hoped for benefits of intense "forest" management, than it would have been for the investor to have liquidated his entire S&L account to assume the same high intensive money management risks.

So before we, the members of the public, invest anymore of our old growth nest egg in your intensive management forest investment scheme, we would like you to more fully address some of the basic forest investment questions not yet fully dealt with in the draft EIS. This way you can better demonstrate to us, your investors, that you are really wise managers and that you have accurately assessed both the environmental and economic risk you may be asking us to assume.

1. The EIS deals very little with the specific issue of timber management despite its title as the "Timber Management" EIS. The EIS should address the ecological and financial feasibility of the various intensive management techniques as recommended in the preferred alternative and discuss the scientific basis by which these methods would be applied.

The EIS does state that compaction from "dragging logs and operating ground-based logging equipment", "can reduce the vegetative productivity of the soils by 10 to 25 percent" and "compaction and reduced infiltration capacity have been found to last at least 55 years (Fower 1974) and therefore may last longer than harvest rotation periods." Also a general prescription is given for high lead cable yarding vs. tractor skidding etc. Yet the EIS seemingly refuses to question or examine the justifications for the present methods of clear cut timber harvest and the associated machinery.

It is as though the public is to unquestionably accept that the BLM applied methods and practices are always best, and the agency should only have to deal with the issue of how much timber harvest, instead of the additional issue of the ways in which it is accomplished.

Different alternatives of timber harvest methods should also be explored to evaluate the possibilities for reduced soil erosion and compaction. How would greater numbers of shelterwood prescriptions reduce the need for shade cards, brush release, "post-treatment surveys" etc.?

The DEIS doesn't address these sorts of questions. Rather we are told that "an environmental assessment of a timber sale will address the effect of the harvest method, yarding system" etc. In this way the BLM avoids having their preferred methods face legitimate scrutiny. As these are public forest, the public should also have a say to the methods that are employed in harvesting them. What may be the most cost efficient in the short run, may be neither the most cost or ecologically efficient in the long run. By only dealing with these questions on the basis of individual E.A.'s major policy decisions are not available for concerned public analysis or review.

2. Page 68 of the DEIS states that "the chemical quality of surface water would be affected by slash disposal." And "that only Alternative 8 would provide adequate protection for streams." The EIS

greater than 50% probability (to the extent there is more evidence for than against) that these herbicides, from a human health standpoint, are safe. The EIS should therefore address the fact that there is at least some lesser probability that herbicides, as they are presently applied, are not safe. The FEIS should more fully discuss that the level of risk therefore assumed unavoidably by certain members of our population, may not be an acceptable level of risk to these individuals.

In a report by the Comptroller General of the United States: Better Data Needed To Determine The Extent To Which Herbicides Should Be Used On Forest Lands, U.S. General Accounting Office GAO-81-446, April 17, 1981 it is generally concluded that the question of extent of replacement of herbicide with non-herbicide treatments cannot be settled largely because the BLM and Forest Service have not kept adequate records of cost or effectiveness, or make comparisons among different sites to determine why certain methods worked on particular sites. On page 51 it stated, "The agencies do not know the total cost for the various methods used to carry out site preparation and release work and cannot, therefore, reliably use cost as the major determinant for selecting among alternative methods." If this is the Roseburg BLM's problem the FEIS should explain so, and offer ways to begin developing this data.

4. The Bureau explains that 200 lbs. of fertilizer per acre will be used in portions of the forest with exception of Alternative 7, but little data is given to substantiate its assumed benefits. What are the impacts of forest fertilization? The FEIS should address problems associated with the:

- a. problems of long term impact to forest soils.
- b. consequences of the runoff of nitrogen into streams.
- c. impacts on delicately adapted improved trees.
- d. lack of availability due to worldwide energy supplies which could get worse.

What is the per cent growth gain per acre fertilized and by what research is this substantiated that this technique will be successful in Roseburg's drier climatic regimes, particularly on south facing exposures? Most fertilization experimentation has been done on soils known to be low in nitrogen. Because of Roseburg's low rainfall as compared with the rest of the Pacific Northwest, why shouldn't we assume that nitrogen needs are less, as the lower rainfall tends to minimize leaching. In fact wouldn't fertilization actually increase the soil moisture stress? Since Roseburg is not like northwestern Oregon, the BLM should produce research on soils substantially similar to those proposed for this fertilization program, before substantial increases in the allowable cut are made, if a sustained yield is predicated on the success of this technique. It is our understanding that, pending further research, the Forest Service made a decision not to take allowable cut credit for fertilization even in northwestern Oregon.

Table 3-2 on page 66 estimates that in the next decade under the

- 16-9 should further discuss the impacts to the biological systems of first and second order streams of introducing "instream concentrations of ammonia-nitrogen and manganese" that "could exceed recommended water quality standards."

3. The DEIS states, buffers "are expected to minimize herbicide drift or accidental direct spraying of water bodies" and movement of herbicides through soil is usually measured in terms of inches or a few feet." Also, "some detectable amounts may reach the streams", "due to pilot error", but "planned delivery techniques would reduce or prevent spray from drifting into streams." The nature of these statements acknowledges that risks nevertheless exists, and all one can reasonably expect to do is "minimize" problems so they "usually" go as they are suppose to. Yet we know that on occasion open water bodies are sprayed, or the risk of herbicides carried in subsurface water does exist. To adequately assess the impact of herbicides, some statistical analysis should be given of percent error (avoidable or unavoidable) in herbicide application. And what are the impacts on the biological systems so affected?

Also the DEIS mentions how "fast-growing hardwoods, such as red alder or vine maple, overtop and suppress slow-starting conifer seedlings". Yet there is no discussion of how broad leaf trees or shrubs might aid the growth of conifers by providing shade on southern exposures. Also there is no information on the contributions of nitrogen-fixation by various species, although studies have been done in southern Oregon and quantifiable data exists.

Page 76 of the DEIS says "diesel oil is sometimes used as a carrier for forest herbicides", "however, data are insufficient to predict the impacts of diesel oil carrier on animals in the EIS area." Yet on page 87 you state, "phenoxy herbicides as applied do not affect birds or eggs unless diesel oil is used as a carrier." Based on this last statement it seems that it would be reasonable for the EIS to consider there is a potential for an adverse impact on avian life as spray operations normally coincide with spring breeding bird activities. What levels of phenoxy herbicides with diesel produce adverse effect on birds and their eggs? How does this compare with herbicide treatments applied in the field?

Science deals in probabilities. While the BLM currently uses herbicides approved by the Environmental Protection Agency, based on a scientific body of evidence that maintains that herbicide use does not present any unacceptable human health risk, there also exists a certain scientific body of evidence that phenoxy residues do bioaccumulate, do move through the soil via leaching, do cause mutations and cancer and are toxic in lower than measurable amounts. Therefore, speaking scientifically, we can neither say that herbicides are totally safe or totally dangerous. Given both conflicting scientific bodies of knowledge, we can only conclude that since the EPA currently approves the use of 2,4-D (supposedly based on scientific evidence) as a defoliant, that there presently exist a

preferred alternative, there will be an additional loss of productivity on 7,872 acres of BLM land. 2,647 acres would lose their productivity even under Alternative 8. (It seems ironic that these acres be considered part of what the BLM chooses to call "Sustain Yield Units" (SYUs).) The draft EIS states that total loss of nitrogen from clearcutting and slash burning can reach as high as 9%. But for comparison BLM settled for an expected loss of 4% nitrogen and phosphorus and a 3% loss of Calcium and Potassium. For the four elements this would result in a total loss of 6,861 tons in the next decade (Table 3-3). Would placing 5603 tons of nitrogen fertilizer on 56,029 acres, at 200 lbs/acre (under Alternative 4), begin to make up for this soil loss?

If the allowable cut is figured on the basis that the combination of two or more intensive management treatments (i.e. first fertilizer then thinning) will double the rate of growth, and therefore permit a larger annual cut, what documentation is there that this sort of "piggybacking" will in fact produce the anticipated extra increase in growth? An analysis of any such assumptions should be made in the EIS if the combination of two or more practices is assumed to result in any greater growth than if only one practice is employed.

5. Under the preferred alternative 333,319 acres will result in trees with a minimum harvest age (MHA) of 50 years. The FEIS should address if the benefits gained by harvesting trees at this younger MHA, would outweigh the long term cost in loss of superior saw timber found in trees in excess of 14.4 inches dbh were these trees not harvested before they reached greater maturity. Also would such a policy be in compliance with the O&C Act's requirement of providing "for permanent forest production"?

The EIS states that "target stocking levels of 245 to 320 trees/acre cannot always be achieved by the initial plantings." Even with "post-treatment surveys", of the Roseburg District's 391,100 acres of commercial forest land, how many acres are currently unstocked or under stocked? How will additional intensive management practices alleviate or contribute to this problem, if these problems have not met with solutions under present practices? Have any growth studies been conducted on Roseburg BLM lands to show that these techniques are successful under your particular set of environmental circumstances?

In terms of site preparation, what assumptions are being made that a certain per cent of natural seeding will serve to make up for stocking failures? It must be recognized in the EIS that with the proposed rapid rates of cutting, that stands that provided gratuitous seed will soon be gone. What assumptions are being made as to how many units will require replanting? Is good site preparation an assumption on which the allowable cut is based? If so, the EIS should analyze your site preparation problems.

16-23 To what extent is the projected increase in the allowable cut

- 16-23 dependent upon the use of improved genetic strains of trees? The EIS should assess the probable success that can be expected to be met given the inadequacy of research that has so far occurred with their use. Also the EIS should assess if this is really a viable technique for increasing production as the tree improvement programs, as required by Instruction Memorandum 08-79-334, are at this time behind schedule.
- 16-24 One justification offered by the DEIS for "the eventual planting of genetically improved trees on 90 percent of the intensive timber production base," is that "maintaining a broad selection of parent trees would ensure variability in genetic populations". While this might insure "variability" it can't replace the specific genes of those tree species that were adapted to those site specific locations. Also it is offered that "BLM administers 29 percent of the total forest lands." Is this meant to infer that the other 71% can be assumed to provide natural stock? It should be expected that adjacent land ownerships will also adopt similar intensive forestry practices.
- 16-25 7. We agree with the DEIS that until "the symbiotic relationships between plants and animals that function in old growth stands" are "fully understood" it is important to maintain "a representative range of the old growth forest and associated floral and faunal genotypes." We take strong exception that "all alternatives except Alternatives 1, 2 and 5 would provide adequate representation of the original old growth systems." This is an incredible statement, when other parts of the DEIS acknowledge that most other old growth dependent species will be reduced below viable, self-sustaining levels except for Alternative 5.
- 16-26 Special area designations such as ACSC's, RNA's and outdoor education areas will comprise no more than .7% of the forest under any of the alternatives. The proposed old growth Bear Gulch RNA recommended by the Federal Research Natural Area Committee, has not only been dropped but is not even mentioned in the EIS. The acreage of the proposed 480 acre North Kytle RNA has been cut in half. We ask that this acreage be restored to the full uncut 480 acres as it was previously represented by the BLM and recommended by Dr. Jerry Franklin and the Research Natural Area Committee.
- 16-27 We take exception to the statement that the preferred alternative is consistent with Statewide Planning Goals number 4 and 5. The liquidation of our old growth as envisioned in the preferred alternative would not be "to protect" this "natural and scenic resource". Similarly it would not serve "to conserve forest land for" old growth "forest uses".
- 16-29 4.5% of the Roseburg BLM District is in public domain lands and are subject to different laws. The ownership is, in itself, justification for true multiple use and wildlife habitat retention.

was within 3 and 4 mmBF of Alternatives 7 and 6 was previously described to offer only "a cavity dweller population at 40% of maximum potential throughout the District". According to Jack Ward Thomas, Wildlife Habitats in Managed Forest, 40% is the very bottom of the "viable" range. This level of cavity nester population would be dangerously close to not being able to maintain self-sustaining populations. We therefore can not feel comfortable in your conclusion that Alternatives 6 and 7 are "close" enough, especially when District surveys revealed that snags and/or wildlife trees are being provided at the rate of 0.1 per acre on recent harvest units."

The recent Solicitor's review has stated "that the O&C legislation is a conservation measure requiring a form of multiple use management" and "further, the Act clearly does not mandate exclusive use, but instead requires management for other interest as well as timber supply." The Law of March 29, 1944 further solidifies BLM's commitment to multiple use management. This law provided the Secretary of Interior with the authority to set up cooperative sustained yield units to among other things "secure the benefits of forest in...preservation of wildlife..." (16 U.S.C. 583) Yet in recommending the protection of only 18 pairs of northern spotted owls to be maintained (under the 300 acre prescription) of the 55 pairs known to presently occur on the district, BLM has done an abysmal job at fulfilling its stated goal to keep the spotted owl off the federal endangered list.

The Solicitor's review states: "In the case of those areas of land where direct conflict in use will occur, the Bureau may choose one use over the other, provided it has analyzed its choice in the context of the principle goals of each Act and is satisfied that the particular choice has not significantly encroached upon the overall effect of those goals." The Oregon Department of Fish and Wildlife has stated that Roseburg's contribution to the Spotted Owl Management Plan is essential in providing a connection that will assure genetic viability between spotted owl populations on the coast and in the Cascades. By recommending less habitat (and number of pairs) for spotted owls in your preferred alternative, then was recommended be provided by the Endangered Species Task Force, you will be severely jeopardizing the viability of this species. Any alternative which would reduce existing old growth on the Roseburg District from 110,900 remaining acres to just 28,400 in just three decades is clearly a "significant encroachment upon the overall effect" of this particular multiple use goal.

In Habitat Diversity For Wildlife On BLM Managed Lands In Western Oregon (Revised October 1981) it is stated that if 15% of BLM lands were retained in midage and old growth forest, minimum habitat diversity requirement could be met. Yet out of Roseburg BLM's 424,000 managed acres, all totaled, less than 9% (38,000 acres) would be provided as habitat, in the preferred alternative, for species which prefer old growth areas--counting scenic corridors and marginally protected stream buffers. As this is wholly un-

8. Under the Endangered Species Act of 1973 it is stated "that all federal departments and agencies shall seek to conserve endangered species and threatened species and shall utilize their authorities in furtherance of the purposes of this Act." Table 3 of the Sept. 1981 Summary Brochure acknowledges that a great more can be done to enhance the habitat of the endangered bald eagle, as was then proposed in Alternative D. The preferred alternative's meager land allocation, that would only serve to protect the small amount of existing eagle habitat, does not demonstrate that you are using your "authorities in furtherance of the purposes of this Act." Protecting bald eagle nest sites is of no major consequence if additional habitat is not provided to encourage at least a partial reestablishment of previous historical populations. Otherwise, you assure, at best, only the maintenance of this existing exceedingly small population. A greater land allocation for this species will be necessary, if BLM wishes to demonstrate they are fulfilling their obligation under the Endangered Species Act.

Page 79 of the DEIS says that construction of new roads would lead to harassment of wildlife and reduce useable elk and large carnivore habitat within one-half mile of these roads." And page 72; "New miles of roads mean more access by hunters" and "an increase in poaching is probable." Also, "Adverse impacts to elk would occur in the long term if any alternative except 6 or 8 were selected." Yet, on page 78 you stated, "Threatened and endangered species would probably be affected only to the extent that road construction could open previously inaccessible areas. This impact cannot be quantified or qualified." If it can be "qualified" for other wildlife species, that it "would lead to harassment" and "an increase in poaching", why should'nt the same be assumed, and thus qualified, for threatened and endangered species? Also the distance in which roads would come within eagle nest should make this impact quantifiable, under various alternatives. Why is it unreasonable to assume that eagles would be more likely impacted in the long run if an alternative other than 8 were selected?

The DEIS states that an "environmental analysis" accomplished prior to any site specific action, would identify any threatened or endangered plant species known to be present on the site and appropriate measures to be taken." This does not address the issue that threatened and endangered species may very well not be discovered during the "environmental analysis" (i.e. the plant is not in bloom) and therefore inadvertently destroyed.

9. In Western Oregon about 30 secondary hole nesting birds are dependent on 14 primary excavators to provide cavities in "decadent" trees in which to nest (the need for Wildlife Habitat Diversity On BLM - Managed Forest Lands In Western Oregon). The DEIS says "to manage primary excavators at the 50 percent level (considered a safe level) requires two snags per acre." The DEIS then says "only Alternative 8 reaches the 60% management level although Alternatives 6 and 7 are close", or at the 40 to 50 percent management level according to Table 3-10. The 50% estimate may be to liberal, as the old Alternative "C", whose harvest level

- 16-32 acceptable to us, we ask that the FEIS more fully "analyze your choice" and address the issue of how these less than viable amounts of acreage will "secure the benefits of forest in...preservation of wildlife?"

- 16-33 We ask that the FEIS address the following questions regarding the northern spotted owl. What does the Roseburg BLM consider to be a viable population and how does BLM's cooperation (or lack of it) with the Department of Fish and Wildlife and the recommendations of the Endangered Species Task Force for the maintenance of 25 pairs affect this species' viability on a State wide, and not just on a District wide, basis?

Studies have shown the spotted owl to be sedentary. A displaced pair will wander until they find another suitable area--failing at that they may die. Moving them around through replacement stands is chancy at best, and probably irresponsible, given that our ability to "create" old growth is entirely hypothetical. Nevertheless, of whatever acreage of old growth is designated to remain, an even greater acreage will have to be placed in a longer rotation than the acreage of old growth left to remain. Only this way can there be an even flow of old growth over time and also continually provide for the designated number of acres.

- 16-34 10. Based on Table 3-6, "Estimated Sediment From BLM-Administered Land (Tons/Decade)", it doesn't seem reasonable to exclude Alternative 4, the preferred alternative, from the list of Alternatives 1 thru 5 in which the EIS states would result in "declining fish populations and would result in a lower fishing success." All alternatives would place in excess of 277,200 tons of sediments in our streams in the next decade including 17 major rivers listed on Table 2-5 that already have "severe water quality problems" ranging from severe sedimentation (13 out of 17); elevated water temperatures (16 out of 17); and streambank erosion (6 out of 17).

- 16-35 How can the BLM claim that Alternative 4's 272,800 tons/decade is significantly less detrimental than Alternative 5's 281,300 tons/decade, a difference of 4,400 tons? How can BLM even calculate the difference this precisely with any high level of confidence to enable your claim? Especially when you concede that "fragile soils are found throughout the Roseburg District" and that "these soils include 33,547 acres of granitic soils or other soils that have a high potential for mass failure and 138,711 acres of soils on very steep slopes with inclusion of unstable headwalls." Let the preferred alternative would commit 333,319 acres of commercial forest land to intensive timber management

¹ This totals 172,258 acres of unstable soils. If this is subtracted from BLM's total acreage of 424,000, 251,742 acres of stable land remains. This is interesting to compare with the 262,436 acre timber base recommended under alternative 8 that would still produce 84 mmBF per year.

and an additional 52,247 acres to be managed under what is called "modified area control" (which still permits timber harvest in riparian buffers). Studies on the Mapleton Ranger District show that landslides in Tye sandstone increases 123 times above the undisturbed forest rate following clearcutting and roadbuilding (according to the DEIS). Yet according to the BLM's 5 year timber sale plan, "4600 acres of these soils, identified as fragile, would be harvested."

It is ridiculous to assume that Alternative 4 will produce as positive gains for fish populations in comparison with Alternative 8--the latter, which by your figures, wouldn't even produce 1/10 the sediment load. Also "should design features fail, portions of streams could be adversely impacted." What is their probability of failure? Are the tons of sediments per decade for each alternative figured without including the additional impacts of possible failures?

16-36

11. Under "Environmental Consequences" page 77, the author attributes the impact of timber management on fish populations and discusses the importance of maintaining buffers to protect "the habitat of aquatic invertebrates, which are important both as food for fish and as indicators of stream quality." "On lands administered by BLM in the SYUs there are approximately 270 miles of streams that support cold water fish." Analysis of the sample 5-year timber sale plan shows that approximately "17 miles of stream that support cold water fish pass through or are adjacent to 77 harvest units." The author fails to draw the obvious conclusion of what additional affect stream warming will have on fish populations under the preferred alternative. The conclusion on page 79 however states, "If it is assumed current fish populations reflect conditions and harvest regulations over the past decade, then it can be assumed that fish populations would decline under Alternatives 1 through 3 due to increased temperatures and sedimentation." "Fish would increase in Alternatives 4, 6, 7, and 8 and remain the same under Alternative 5."

16-37

It is hard to see how they will remain the same under the No Change Alternative 5 "if it is assumed current fish populations (which are not high) reflect conditions and harvest regulations over the past decade" and as explained on page 78, since Alternative 5 makes "no provision for riparian buffers..." "Water temperatures would increase greatly." On page 68, the forecasted sediment loads of Alternatives 6 and 8 don't even come close to the magnitude of other alternatives' sediment loads, including Alternatives 4 and 7. It is difficult to see how either Alternative 4 or 7 could be expected to provide fish populations that would do anything but decline. It is amazing that BLM thinks that a sediment load of 281,300 tons (Alt. 3) will decrease fish populations, but a projected sediment load of only slightly less (272,800 tons under Alt. 4), will increase fish populations. On page 18 it states Alternative 4 allocated the same acreage to timber as Alternative 3. Also "management elements would be the same as Alternative 3"--under which "fish populations would decline."

Yet in seven out of eight BLM alternatives buffers are provided only along streams (200 feet wide in most cases) that are third order or greater. According to the DEIS this makes up only about 3 percent of the forest land base. An additional 12,150 acres of small first and second order streams would only receive protection under the Full Ecosystems Alternative, Alternative 8. In addition, page 45 of the DEIS concedes, that even along 3rd order streams "some of this has been altered by past timber management practices and is in less than optimum condition."

Oregon Administrative Rules, Chapter 340, State Water Quality Law for the Umpqua Basin and the Clean Water Act of 1972, as amended, specify that no temperature increases are allowed on streams that are above 58° Fahrenheit, and federal agencies are bound to that state standard. How will the preferred alternative prevent temperature increases when Table 2-5 "Severe Water Quality Problems" indicates that 16 of 17 major streams in the Roseburg District already have "elevated water temperatures?" Sediment yield or turbidity is limited to 10% increases--how can full timber harvest be allowed on first and second order streams with the increased possibility of landslides when roots die in seven to ten years?

16-39

14. In the FEIS please provide some explanation of the allowable cut calculation. What assumptions must be made to increase present harvest levels? If any assumptions are being made which lack sufficient documentation, then the FEIS should explain the rational for using these assumptions.

16-40

What would be the cost-benefit ratio for various intensive management practices if you did not take a credit for cutting existing old growth, but rather figured the allowable cut effect (ACE) just assuming reforestation alone?

16-41

A risk factor should be figured into calculating the allowable cut. The FEIS should state what the risk would be for:

16-42

a. drops in biological potential due to fire or disease. (The DEIS should also describe what forest diseases presently exist on the Roseburg District.)

16-43

b. drops in biological potential resulting from overly optimistic projections of growth increase resulting from intensive management.

16-44

c. inability to carry out management programs because of financial squeezes or contract failures. (If a key assumption of the allowable cut calculation is that sufficient funding and personnel will be available for the implementation of the final decision, then the FEIS should include a list of priorities should funding fall below the accustomed levels.)

Table 1-5, "Summary of Impacts", provides a somewhat distorted picture of net job losses. Besides being based on a set of assumptions not fully explained in the DEIS, future employment pictures might be more accurate if they were based on present trends in the industry for the entire southern Oregon area coupled with the reality that the "building boom" days, facilitated by low mortgage rates, are gone. Also, if instead the per cent of total

12. The DEIS states that "Alternative 8 provides temperature maintenance for first order and larger streams." And under Alternatives 1 and 5 removal of merchantable timber would reduce the effectiveness of buffers to provide adequate shade resulting in increased temperatures." Also "downstream shading does not significantly lower temperatures of streams warmed by upstream exposure (Brown et. al. 1971)." Since the tons of "Sediment Produced Through Proposed Buffer" in Table 3-5 is only again slightly less for Alternative 4 than Alternatives 3 and 5, why should we not also assume that Alternatives 2, 3 and 4 will also raise stream temperatures, especially when the data shows that the magnitude of this impact will be even greater in Alternative 2 than 5?

16-38

Also we would expect fish success to decline under the preferred alternative because "oxygen concentrations in stream gravel may continue to decline for several years after logging, because water-flow through gravels is restricted by sedimentation (Hall and Lantz 1969)." And, "for this reason, impacts on intragravel oxygen in the SYUs would be directly related to the change in sediment yield discussed above" (page 69).

Also this same sediment yield, which was reported to be "23 times the natural rate (undisturbed condition) in a patch cut watershed with roads (Fredriksen and Harr 1979)", could absorb and contain any measurable increases in summer low flow levels. According to research done by Denise Harr of the Forestry Science Lab in Corvallis, you can't count increased low flows as a benefit. Any hypothetical increase in flows are going to be less than your ability to measure on the larger streams, and will be less than the year to year fluctuation of the larger streams.

13. Other research by Sedell, Everest and Swanson at the Pacific Northwest Forest and Range Experiment Station have suggested "guidelines for future practices that will best preserve and restore both physical and biological integrity in streams ecosystems" (Fish Habitat and Streamside Management Past and Present). Four key structural components are to provide "(1) large live trees in riparian zones, (2) large snags, (3) large logs on the floodplain, and (4) large snags and large organic debris in the stream." "Organic debris in streams increases diversity of aquatic habitat by forming pools and protected backwater areas, serves as a source of nutrients and substrate for biological activity, and affect sediment movement and storage by dissipating energy of flowing water and trapping sediment."

Alternatives, other than #8 would not provide these conditions. Page 75 of the DEIS states that "management by modified area control as proposed in Alternatives 2, 3, 4 and 7 would...substantially alter riparian habitats."

Of the Roseburg BLM's 424,000 acres only 22,800 acres consist of riparian habitat yet "riparian habitat is important as 88 percent of the terrestrial wildlife species in the area use it to some degree."

Job losses from BLM alternatives were compared with projected declines in all areas, a more accurate picture would be portrayed, rather than to basically just single out BLM's contribution. Previous studies have shown that the southern Oregon counties are net exporters of timber. Apart from the present recession, as long as mill capacity is above supply, there will be job losses in the timber industry. The FEIS you write should acknowledge these facts and estimate what the job potential would be if more of this timber, presently exported, were kept cycling through the local economy.

16-45

15. We find the discussion of impacts on recreation ludicrous. The DEIS states that "opportunities for such activities as camping, hiking, fishing, hunting, nature study and sightseeing would be degraded in some areas." Yet "clearcutting" somehow balances this by providing "opportunities" for "picknicking", "using ORV's" and "providing openings for scenic views." Making a clear cut to provide a scenic view, would be like blowing a hole in the roof of your living room, to better facilitate seeing the stars. Furthermore, there are presently 12,000 acres of roads on the Roseburg BLM. This is presently more acres of roads than Alternative 5, the No Change Alternative, would provide in acres of old growth in just a little over 20 years (see Table 3-9 page 73). In addition the DEIS states "in Alternatives 1, 2, 3, & 4 road building during the decade would be more than in the past decade." It seems the ORV opportunities are going to be more than adequately provided for in proportion to opportunities for hiking and nature study in an aesthetically pleasing environment. The DEIS's reference to clear cuts providing "picknicking" opportunities does not deserve further comment.

We also resent the assumption that "some visitors may relocate to other areas where opportunities for desired experiences exist." The point is, at the rate we are manipulating and altering our forest and other natural places, there will simply be few places left to go where the hand of man hasn't already marred the earth. We disagree with the statement on page 81 that "Alternatives 2, 3, 4 and 7 would be satisfactory "in meeting the demand for hiking". Especially when you lump the hiking experience with "horseback riding and off-road vehicle areas and trails." Also, some horseback riders may prefer bridle trails that offer a greater aesthetically pleasing experience than what can be afforded, in the above mentioned alternatives, from a tractor road through a clear cut.

Our forests should be managed, but not exploited. We need to remove forest products to meet human needs, but not at the total exclusion of all other creature's needs. Both house of Congress recently demonstrated their concern by an overwhelming unanimous reauthorization of the Endangered Species Act. We don't believe that the American public, represented by our Congress, accepts the management of our forest's resources by an agency whose management direction openly implies and reports the future degradation of our wildlife, our watersheds, and our remaining old growth forests.

Sincerely,

Umpqua Valley Audubon Society Board of Directors

Anna Stummer
 Roberta H. Ansett
 M. P. Vogel, M.S.
 Virginia L. Vogel
 J. J. Nicholas
 Kristina Jean Christensen
 Joyce Keuster
 Robert Devoter
 James H. Hume

Response to comments in Letter 16

16-6 See response to comment 16-3.

16-7 See response to comment 5-1.

16-8 Timber harvest method alternatives and their influence on soil erosion and compaction are discussed in detail in Chapter III 1975, Timber Management Final Environmental Impact Statement, incorporated by reference in the EIS

The silvicultural validity and cost effectiveness of clearcutting and intensive reforestation vs. shelterwoods are discussed in a Roseburg District study, "Use of Artificial Shade to Increase Survival of Douglas-fir in the Roseburg Area" (Wert and Lewis 1977). This study is available for review at the Roseburg District Office.

16-9 In the Roseburg SYUs first and second order streams are normally dry except during peak flow periods. Nutrient concentrations following slash burning will normally not exist during flow periods; therefore, impacts to water quality are not significant. Also, see text revision in FEIS, Impacts on Water Resources, Water Quality section.

16-1 No allowable cut credit is taken for either the use of herbicides or manual release methods of vegetation control. Refer to DEIS, Appendix C, Allowable Cut Effect, page 127. Also, see response to comment issue 3.

16-2 Alternative 4 in the DEIS is the timber management component of the MPP preferred alternative developed in September, 1981. The difference in volume is the result of a correction in data entry for the allowable cut calculation.

16-3 Alternative 8 is the wildlife alternative which includes no land allocated for intensive forest management practices. Refer to Appendix C, Table C-2.

16-4 The Roseburg District Young Growth Management Committee Report, 1979 (available at the Roseburg District Office), addressed the intensive management techniques incorporated in the Roseburg District plan, along with rationale, assumptions and literature references. Yield gains associated with such practices are represented by DPIT (see response to comment 16-20). Scheduled monitoring will examine results of intensive practices as described in the DEIS, Chapter 1, page 23.

16-5 The harvest level for all alternatives is computed to be sustainable for 400 years. Refer to DEIS Appendix C, page 127. Fisheries, recreation and other water dependent activities are expected to be sustainable.

16-10 The Roseburg District has been monitoring herbicide operations for several years. This includes testing a number of water samples. All of the test results have indicated either no herbicide residue or levels of herbicides well within set standards. Results are available at the Roseburg District Office.

16-11 The statement on page 87 of the DEIS was in error and has been removed from the FEIS.

16-12 Evidence examined by EPA in the 2,4-D registration process and more recently summarized by Frank Dost et al. (SOCAIS vs WATF) in Federal Court in Portland indicates no significant human health hazard from silvicultural application of 2,4-D. This finding has been challenged by Drs. Melvin Rueben and Ruth Shearer, both of whom believe that any human exposure to 2,4-D, regardless of how small or minute the amount, presents a significant hazard to human health.

16-13 Roseburg District has conducted several cost studies associated with vegetation management practices. Data are currently being collected for each vegetation management practice. These data are being used in the new Vegetation Management EIS, scheduled for completion later in 1983.

16-14 Long-term impacts to forest soils were judged to be insignificant because the nitrogen increase caused by fertilization will readily be eliminated by plant adsorption, volatilization and microbial action.

16-15 See response to comment 15-7.

16-16 Impacts from fertilization on genetically improved trees are presented in the DEIS Chapter 3 Impacts on Vegetation section page 70. No adverse impacts on genetically improved trees are expected to occur.

16-17 Some recent forecasts indicate that energy supplies may be abundant for years to come.

16-18 The Regional Forest Nutrition Research Project has been studying the effects of forest fertilization in southwest Oregon for over 10 years. There are seven study plots in the BLM Roseburg District. This research project is being conducted by the Pacific Northwest Forest and Range Experiment Station and the University of Washington. Results of the study indicate that cubic feet/acre/year increases in tree growth commonly exceed the 11 percent gains in the district's allowable cut model. Additional information is available at the Roseburg District Office.

16-19 Fertilizer application, according to the district's management regime, would not replace the volume of soil nutrient loss from clearcutting or burning; however, fertilization provides an average timber volume increase of 11 percent over natural production yields. Thus, overall soil productivity is increased over natural levels through fertilization.

reforestation delays, as well as successes, are accounted for in the "Reforestation Lag" time input to the allowable cut calculation.

Many studies specific to the utility of the proposed intensive management practices on the Roseburg District are cited in the Young Growth Management Committee Report (1979b). Additional local studies attesting to the effectiveness of the practices are available in the district office.

One hundred percent planting of harvested lands is planned. Gratuitous seed from an adjacent source is not necessary to achieve district goals but would certainly contribute toward reaching the stocking standards if it occurred.

Good site preparation and site maintenance are requirements of a successful reforestation program.

16-23 See response to common issue 3 and comment 4-3. The Roseburg District Young Growth Management Committee Report addresses the viability of the tree improvement program.

16-24 BLM has made no assumptions as to reforestation methods on adjacent private lands. Appendices E and F illustrate that BLM plans are not going to significantly alter stand structure in the EIS area, as related to the tree improvement program.

16-25 See revised text, FEIS, Chapter 3, Impacts on Vegetation section, for a more comprehensive discussion of this issue.

16-20 The concept of "piggybacking" intensive practices is controversial. This controversy stems from a lack of research on the cumulative effects of applying various combinations of intensive practices to stands of varying site quality over the length of a harvest rotation.

Although long-term research is lacking, research of shorter duration has produced much data. The authors of DFIT feel that data from short-term research can be safely extrapolated into the future. (DFIT is the managed Douglas-fir stand yield simulation model developed at the USFS Pacific Northwest Forest and Range Experiment Station to project future growth under various intensive management schemes.)

In developing the DFIT model, the best available information was used to simulate the combined effects of intensive practices. BLM has adopted DFIT, with certain adjustments, as an acceptable estimator of future managed stand yields. Also, see response to common issue 3.

16-21 Refer to DEIS, Appendix B, Table B-8. The analysis of differing minimum harvest ages notes that under most conditions, the net present value of the forest decreases with an increase in minimum harvest age. Yields displayed in all alternatives are sustainable.

16-22 Two thousand two hundred twenty-six (2,226) acres of recent clearcuts awaiting site preparation are currently non-stocked. Four hundred sixty-seven (467) acres of brush and hardwood conversion areas await initial planting. Five thousand fifty-nine (5,059) acres of partial reforestation failures are currently understocked. These

16-26 The Research Natural Area Committee originally identified the Bear Gulch parcel as a needed cell for the western Cascades physiographic province. The committee later indicated the cell was within the Klamath Mountains or Siskiyou province, for which the Roseburg District has no responsibility.

16-27 See response to comment 5-2.

16-28 BLM's conclusions regarding consistency with Statewide Planning Goals were developed through consultation with Department of Land Conservation and Development staff.

16-29 See response to comment 7-1.

16-30 The effect of the transportation system on State-listed species can be quantified to the extent the given alternative provides protection for selected owl pairs. The primary effect on the spotted owl would come from harvest unit placement. Because road development is part of an overall harvest action, roads are assumed to affect the owls in the same manner as the harvest units when in proximity to owl habitat.

With regard to federally listed species, i.e., the bald eagle, it is assumed that compliance with the Endangered Species Act and the development of Habitat Management Plans (on the lands allocated for the eagle) will assure that no adverse conflicts between the transportation system and the species habitat will occur.

16-31 Every effort, including appropriate season field examinations, is made to become reasonably certain that there are no impacts to federally listed threatened and endangered plants or those under review for federal listing. Guidelines for botanical surveys are given in Instruction Memorandum Roseburg 81-22.

16-32 As stated in the DEIS, Chapter 3, Impacts on Animals section, not every alternative may provide habitat for all wildlife species in the long term. Also, see response to common issue 1 and comment 12-1.

16-33 Based on the direction provided in the the new O&C Forest Resources Policy (Appendix A), the BLM will not actively pursue a management plan to yield any specified population level for spotted owls.

An assessment of the effect this approach has on species viability statewide is included in the FEIS, Conclusions section, Chapter 3, under Impacts on Animals. Also, see response to comment 83-6.

16-34 The conclusions reached on page 79 of the DEIS, Table 3-6, are based on changes in temperature and sediment compared to the existing situation.

16-35 Conclusions on sediment yield for each alternative are compared against the existing situation. Alternative 5 represents data developed from the previous planning process, which is not necessarily comparable with this plan. Based on similar methods of calculation, Alternative 4 is determined to be less detrimental than Alternative 5. However, the degree of significance and level of precision are difficult to calculate with a high level of confidence.

16-36 The probability of failure cannot be precisely determined, but properly designed and constructed projects have a low probability of failure. Specific practices are subject to change based on monitoring and results of new research. The impacts discussion in both the DEIS and FEIS does not address the possibility of design failures.

16-37 The text has been revised to indicate that a vegetative buffer will be maintained in Alternative 5. In the EIS, Alternative 5 is considered to be a continuation of the plan for the 1970s and a reflection of the existing situation. Research by Hall and Lantz (1969) indicates that increases in fine sediments to spawning beds can decrease the permeability of spawning gravels, affecting the survival of salmonid embryos and impeding emergence of fry. Increases in sediments over the existing situation (Alternative 5) would result in decreases in fish population, while decreases in sediment from the existing situation (Alternative 5) would result in more favorable habitat capable of supporting increased fish populations. From this, it can be assumed that fish populations would be greater in Alternatives 6, 8, or 9 than in Alternatives 4 or 7.

16-38 Buffers for sediments and for shade are two separate things. Shade over third order and larger streams is provided in all alternatives. Because Alternative 1 permits timber harvest in the streamside buffers which would reduce shade, stream temperatures are expected to increase under that alternative. Harvest in riparian areas on first and second order streams is not expected to increase temperatures as those streams are usually dry in the summer.

16-39 Chapter 340, State Water Quality Law, states that forest management activities shall be in accordance with the Oregon Forest Practices Act. Also, see response to comment 15-6.

16-40 The allowable cut computation process is discussed in the DEIS, Appendix C, page 127. Prescribed management treatments are described in the EIS, Chapter 1 and summarized on Tables 1-2. Also, see response to common issue 3.

16-41 There is no allowable cut effect for reforestation alone. Refer to DEIS, Appendix C, page 127 for discussion of the Allowable Cut Effect (ACE).

16-42 In the event of a natural disaster, such as fire, blowdown, disease or insect attack, the salvable volume harvested would be substituted for the normally planned clearcut volume. No other safety or risk factor is built into the allowable cut determination process. However, if a disaster were extensive, a recalculation of the allowable cut could be made before the normal 10-year recalculation.

16-43 Yield projections for intensive management practices are based on current research and are adjusted to operational levels. Yield gains from intensive management practices are reduced to account for physical variables which differ from controlled research and which are below ultimate biological potential. These factors are built into the allowable cut computation (refer to DEIS, page 127). Also, see response to comments 16-22 and 16-23.

16-44 See response to common issue 2.

16-45 Table 2-17 of the EIS reports rates of change in lumber and wood products employment for Douglas County, the regional economy (Douglas, Lane, Coos, Josephine, and Jackson counties) and Oregon for the period 1972-1980. The text on page 54 of the DEIS cites three reports which make projections about employment in lumber and wood products manufacturing. The FEIS displays the impacts on the human environment of an array of alternate timber management programs available to the Roseburg District of the Bureau of Land Management. It is beyond the scope of the FEIS to evaluate alternative federal policies on international or interregional log export.



United States Department of the Interior

NATIONAL PARK SERVICE

Pacific Northwest Region
Westin Building, Room 1920
2001 Sixth Avenue
Seattle, Washington 98121

IN REPLY REFER TO:

1202-03 (PNR-RE)
Roseburg Timber Management
DEIS

August 12, 1982

Memorandum

To: District Manager, Bureau of Land Management, Roseburg District Office

From: Associate Regional Director, Recreation Resources and Professional Services, Pacific Northwest Region

Subject: Roseburg Timber Management Draft Environmental Impact Statement

Our comments on the subject document are provided below:

32-1

The proposed protection of cultural and/or historic resources is very satisfactory. However, we have some concern about the way in which the impacts on recreation are described. It is stated that "timber harvest in the vicinity of potential hiking and equestrian trails would degrade the recreation experience . . ." While this may be so, it might be stated that if timber harvest is planned in the vicinity of potential hiking and equestrian trails, attempts will be made to keep the impacts upon the recreation experience to a minimum.

We realize environmental assessments will be prepared prior to each timber sale and that these documents will provide more specifics. We will look forward to reviewing the assessments.

Thank you for the opportunity to comment.

Richard L. Winters

Richard L. Winters

33

-2-

Richard Chasem
P.O. Box 51
Dillard Co, 97432
16, Aug. 1982

Mr. Jim Hart, District Manager
Bureau of Land Management
777 N.W. Garden Valley Blvd.
Roseburg OR, 97470

Dear Mr. Hart,

After several weeks of careful reading and study of the Roseburg Timber Management Draft EIS, I would like to submit the following comments. I realize at the present time we ^{are} discussing the adequacy of this document to prepare the final EIS some time next year.

After years of planning documents from the county, state and Forest Service, this BLM booklet is quite refreshing. The planning effort and resulting text, I feel is generally to be commended for presenting a series of choices and then honestly examining the conflicts that each choice entails. When one remembers the BLM of 5 or 6 years ago it is clear you folks have come a long way.

Since the final EIS will be the basis for decisions we will live with for ten important years, a careful discussion of the facts and full economic consequences of our decision is necessary. Whatever qualities this Draft EIS might possess there are also several important flaws. No planning document is perfect, however the problems I see are so fundamental the average citizen could be misled easily.

Response to comments in Letter 32.

32-1 This kind of analysis would be applied to individual timber sales and detailed in environmental assessments when such conflicts are identified.

This document displays a thorough grasp of the Timber Industry economy and the standard justifications of that economy. When the economies of the forest other than logging are presented the information becomes vague and the handling clumsy. Notice the oft mentioned Alternatives 1,2,3,4, & 5. These are reasonably developed choices of subtly and variation concerning the timber management end of things. The remaining three alternatives are crude lumps that are difficult to divide into their finer points that they might be contrasted to any of the first five. While all conflicting points are written down, the overwhelming bias is to increase the allowable cut. This is hardly surprising, it is also displayed constantly, again and again throughout this document.

Basically this EIS plays off the money to be made clear cutting against the birds and the bees and the fish. As the State of Oregon continues to emphasize the tourist attractions of this area the monetary values of clean water, good fishing and pristine vistas will be increasing, indeed such things are priceless. Yet in this Draft EIS tourism and the fisheries are grossly underestimated. The North Umpqua River is not rated as a Class I scenic area for example. This EIS needs a far more sophisticated analysis of the non timber forest resources and their economic value. Such an analysis might show the short term benefits of clearcutting are wiped out by the long term value of old growth, the non-timber multiple uses and the cost of loss of productivity due to erosion.

33-4 Another fundamental shortcoming of this document is the assumption that "Timber harvest under all alternatives would be accomplished predominately by clearcutting."

Few citizens object to the removal of trees, but clearcutting will be a growing lightning rod for the public's fury. It is both ugly and wasteful in the public's eye. An economic analysis of the various high lead methods of clearcutting versus cat logging, versus horse logging in sensitive areas, versus the logging of small units by private citizens is not only deficient, it is absent. When one thinks of the value of old growth timber 50 years from now as compared to a tree 14 inches in diameter, it might be quite foolhardy to clearcut every thing now. If it is employment we seek, are alternative timber cutting practices liable to put more people to work? This document cries for a better analysis.

It seems to me most of the conflicts of timber land use occur on the same ground. The tourists like the scenery of the water, which is where the fish live and where the riparian zones are found as well as sensitive habitat. If methods to extract logs from such areas without substantially altering the forest could be contracted perhaps everyone could be accommodated.

This brings me to a final point. I would like to see the alternatives mapped out better. If they each have different acreages I would like to see what is going where. Where are the various protected areas and where is the habitat to be protected by the differing choices?

The BLM needs to realize that in addition to providing logs for the mills they are also adjacent neighbors for a lot of us and more are coming. While I do not want to see local mills shut down this is no excuse to destroy America's legacy of natural beauty.

For the shade of a tree,

Richard M. Chasz
Richard Chasz

Response to comments in Letter 33

- 33-1 Estimates of sport angling and spawning escapement for the Umpqua Basin were provided by the (Oregon Dept. of Fish and Wildlife 1977 and Hassleman 1979). Estimates of recreational use of public lands administered by the Roseburg District resulted from periodic counts at both developed and undeveloped sites.
- 33-2 The North Umpqua River, although very high in scenic quality and a designated State of Oregon Scenic Area, does not fit the criteria for Class I scenery. It is categorized Class II (refer to DEIS, page 49 for description of classes).
- 33-3 The economic effects of BLM-supplied fishing, hunting and outdoor recreation on local employment, personal earnings and public revenues are evaluated in Chapters 2 and 3 of the EIS. The economic analysis is limited to these resource uses because they are the only uses for which reliable and regularly tabulated data exist.
- 33-4 See response to comment 5-1.
- 33-5 The economics of specific logging practices are considered in the design of each timber sale.
- 33-6 Maps are available for review at the Roseburg District Office for those alternatives derived through the land use planning process (Alts. 3, 4, 6, 8) as well as the new Preferred Alternative (Alt. 9).

43



UMPQUA COMMUNITY COLLEGE

THE COMMUNITY COLLEGE OF DOUGLAS COUNTY

I. S. "BUD" HAKANSON
President

Post Office Box 967
Roseburg, Oregon 97470-0226
Telephone 440-4600

August 16, 1982

District Manager
BLM
777 NW Garden Valley Blvd
Roseburg, OR 97470

Dear Sir:

It has recently come to my attention that you are proposing to adopt a plan which would require a number of acres of timber land to be immediately set aside to protect Spotted Owls. As I understand it, the Alternate 2 Plan would still set aside 150,218 acres of old growth timberland.

43-1 I am at a loss to understand why that would not suffice for the 55 pairs of owls in our district. If you divide 150,218 acres by 55 pairs of owls, you get 2,731 acres per pair. If in fact that figure is correct, I would recommend that you adopt Alternate 2.

This recommendation is made in light of our current economy, and the fact that it is subject to review later in the century.

We need to get Douglas County back on the road to economic recovery, and at the same time preserve the Spotted Owls!

Sincerely,

I. S. Hakanson
I. S. Hakanson
President

ISH j

Response to comments in Letter 43.

- 43-1 Alternative 2 would not set aside any old growth timber land with the exception of that for bald eagles and what may occur on non-commercial forest lands. There would, however, be approximately 150,000 acres of mature and old growth forest remaining after one decade if Alternative 2 were selected and implemented, but the size and distribution of owl habitat may be compromised by unconstrained timber management activities to the point where some habitat would no longer support spotted owls.



August 17, 1982

Mr. James Hart, District Manager
 Roseburg District
 Bureau of Land Management
 777 N.W. Garden Valley Blvd.
 Roseburg, Oregon 97470

Dear Jim:

This letter is in response to your request for comments concerning the D.E.I.S. for the Roseburg District Land Use and Timber Management Plan.

Our general reaction to the Preferred Alternative is mixed. We are pleased to see a proposed increase in the allowable cut for the decade. We are concerned however at how this increase was justified. Most importantly we are disturbed at the very significant withdrawals from the commercial timber land base for the highly questionable purpose of dedicating old growth timber to spotted owls who may or may not need it. Further we are concerned about directing substantial management efforts toward this species when it is questionable as to what it's biological needs are and secondly whether or not the species really needs special protection in the first place. Because of these concerns which we feel are inadequately addressed in the D.E.I.S. we cannot support the proposed action.

One of the common inadequacies we have found in practically all environmental impact statements is a tunnel vision concentration on the impacts of forest management as they relate to the forest environment devoid of human influence. While this approach certainly caters to the views of the preservationist camp, it does not address the concerns and needs of our community and our country.

44-1 This D.E.I.S. does address the concerns of the community to some extent. It does not however address in real terms the trade off of jobs and community stability versus preserving old growth timber for a population of owls.

We are quickly learning in today's economy that our Nation has drifted too far away from the efficient production of basic goods and services that are necessary for human survival and betterment. Do you think for example that the unemployed, the poor people and the underfed people of this country and the world really are that concerned about spotted owls?

Mr. James Hart
 August 17, 1982
 Page Three

(B) Threatened or Endangered Plants page 71

44-4 The concluding statement reads "Therefore, environmental analysis accomplished prior to any site specific action, would identify any threatened or endangered plant species known to be present on the site and appropriate measures to be taken." If this process is properly followed it is difficult to understand how "changes in plant communities and habitat could eliminate some plants." (page 5) (Emphasis added). Thus the elimination of some plants is not possible or likely.

(C) Impacts on Animals Terrestrial Vertebrates page 72

"Lyon (1979) and Perry and Dverly (1977) have shown that elk use is reduced within one-half mile of roads traversing elk habitat." I would suggest that you make these studies available for reading by the elk who frequently inhabit the old Hinsdale Ranch pastureland adjacent to Hwy. 38 just east of Reedsport. These elk obviously do not know that their behavior is nonconforming to current standards set by Wildlife Biologists.

(D) Threatened and Endangered Animals page 78-80

In the final paragraph under Conclusions it reads in part "The cumulative effects on the northern spotted owl are difficult to predict as planning efforts, ..., are just beginning." "However, if other agencies and BLM Districts do not provide for the recommended number then the species would certainly be in danger and be considered for Federal status regardless of the Roseburg decision." (Emphasis added).

44-5 We find this conclusion to be an incredible statement. In the first place if you cannot predict the cumulative effects on owl populations how can you say that the "species would certainly be in danger"? Secondly this plan only covers a 10 year period at the end of which there will still be 140,000 acres of old growth habitat on the District. Surely even the owls could still survive on only 140,000 acres.

This entire section indicates a paranoid approach to wildlife management which we feel is completely uncalled for. Nothing presented in this section justifies a 20,000 acre land allocation for the owls.

Conclusion and Summary

We do not support the proposed action chosen in the D.E.I.S. Giving away a significant commercial timber land base for the questionable purpose of saving a bunch of owls whose population dynamics are still up for debate in our opinion is a violation of public trust. Furthermore we feel the proposed action is in violation of the O&C Act of 1937.

Mr. James Hart
 August 17, 1982
 Page Two

Our specific comments related to the D.E.I.S. follow:

Environmental Consequences pages 4-6

44-2 The author of this section obviously intended to paint the proposed action as black as possible. Statements such as "changes in plant communities and habitat could eliminate some plant species" and "there would be significant long-term adverse impacts to some animal populations..." are certainly designed to alarm the reader. Since this plan only covers a ten year planning period it would appear that these inflammatory statements are out of line.

Criteria for Evaluating Alternatives page 14

44-3 It would appear that some of the criteria identified are certainly more important to the selection of the preferred alternative than are others. Surely providing local economic stability must weigh more heavily in the decision making process than for example providing for Research Natural Areas. I believe a grouping of these criteria by relative importance would provide a better idea to the public as to how a proposed action is chosen. It might even help the decision maker.

Comparison of Impacts page 23

In one short sentence on this page you have identified, probably by accident the key concerns of this Impact Statement. It reads "Two areas of major impacts are wildlife habitat and economic conditions". My first reaction is which is the most important, economics or wildlife habitat? Since the proposed action raised the land allocation for wildlife habitat and lowered the land allocation for timber management it is obvious that the concern for wildlife habitat was the greatest. I do not agree with this assessment, and neither do the vast majority of people who work for a living in this county.

Environmental Consequences page 63-89(A) Introduction

The concluding statement reads "A basic assumption of the analysis is that sufficient funding and personnel will be available for implementation of the final decision." For the sake of our economic well being we sincerely hope this assumption is valid. Judging by the experience of the Medford District and their newly adopted Timber Management Plan it is clearly a "high risk" that indeed funding won't be available and our proposed allowable cut will fall as monies for intensive management do not appear. Perhaps this gamble should be discussed in the section justifying increased allocation of land to wildlife habitat.

Mr. James Hart
 August 17, 1982
 Page Four

We recommend a complete rewriting be undertaken with the goal of eliminating the bias against timber management injected by wildlife worshippers. The only viable alternative in our view is Alternative #2 which should be identified as the proposed action in the Final Environmental Impact Statement.

Sincerely,

SUN STUDS, INC.

Robert E. Ragon
 Vice President

RER:vf

cc: Douglas County Commissioners

Response to comments in Letter 44.



Weyerhaeuser Company

P.O. Box 275
Springfield, Oregon 97477
A/C 503-746-2511

August 18, 1982

44-1 See response to common issue 4.

44-2 The discussion on short-term impacts has been expanded in the FEIS, Chapter 3. EIS procedures require an analysis which goes beyond the 10-year period to consider long-term impacts.

Roseburg District Manager
Bureau of Land Management
777 N.W. Garden Valley Blvd.
Roseburg, Oregon 97470

RE: 1792

44-3 Refer to revised Appendix A, O&C Forest Resources Policy.

44-4 Present policy protects federally listed, proposed and candidate plant species but does not provide protection for other species that may be rare or rapidly declining in a single State (see revised Appendix A). Also, see response to comment 16-31.

44-45 See response to common issue 1 and comments 11-8 and 43-1.

We have reviewed and analyzed the Roseburg Timber Management Draft Environmental Impact Statement (DEIS) and offer the following comments for your consideration in construction of the final DEIS.

We support the use of management Alternative #4 (PA) subject to a few modifications. In Alternative #4, the principal harvesting technique and age, the site preparation methods utilizing broadcast burning as a primary source, herbicides where appropriate, and mechanical site preparation limited to slopes under 35%; as well as the reforestation targets; are basically consistent with intensive forest management methods. The BLM reforestation management costs, however, listed on page 121 do seem to be out of line with the accepted industry standards. We also question why only 91.7% of the annual harvested acres would be scheduled for replanting since most intensive forest management systems call for regeneration of all acres within a year of harvesting. Lastly, we would also have found it useful to have a display of harvest per decade over the rotation period of the district.

Alternative 4 provides for approximately 18,300 acres of buffers along third order and larger streams managed under a modified area control. Harvesting in this area would amount to an estimated 6%, of which only 11% would be by clear cut. Harvest of stream buffers should be consistent with the Oregon Forest Practices Act. We do not support alternative #4 where it requires buffers in excess of FPA regulations.

Bureau of Land Management
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Bureau of Land Management
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Page 3

Alternative 4 calls for a 43,779-acre reduction in the intensive timber production base (as in contrast to the current situation). The majority of that amount can be attributed to wildlife habitat management techniques. We do not support a reduction in the timber base. The O&C Act, while promoting other forest uses, requires the BLM to manage its lands for "permanent forest production" as a primary responsibility. It is inconsistent to restrict harvest of old growth timber on federal land subject to that legislated forest management mandate. We recommend that the BLM do some type of cost/benefit analysis of its wildlife protection policies and consider more scientific input than simply the Oregon Endangered Species Task Force in terms of spotted owl management.

In addition to support of a management alternative, we would like to comment briefly on a few points of management philosophy. On page 82 of the document we find, "most timber management practices...create visible contrast in the landscape. Assessing contrast for proposed activity can indicate the severity of impact and help identify mitigation measures to reduce the contrast and meet VRM class objectives for an area." And later we find "all public lands would be managed in accordance with objectives to mitigate or in some cases avoid impact of management activities on scenic values." Nowhere do we find the rationale explaining why the BLM VRM objectives are appropriate or should be met at all. The proposals for scenic area management are apparently based on the assumption that only the old growth stand is aesthetically pleasing. In an area where timber is grown as a crop, serving as a basis for our livelihood, we believe there is a need to redefine what is scenic. The broad mosaic of timberland ages from old growth to second growth to fresh clear cut should be viewed as natural and scenic. The current proposals for visual resource protection subjugate forest management activity to a visual quality criterion which is loosely defined and not consistent with the mandate of the O&C Act.

In regard to wildlife habitat management, throughout the document are found such statements as the following:

Page 79: "This long-term simplification (of stand structure) and loss of diversity would be significant and adverse."

Page 79: (Snag dependent wildlife), "Alternatives 6 and 7 would support marginal populations while alternative 8 would provide for adequate numbers."

Page 75: "...and 8 snag dwelling species would decline to below BLM target levels in the long term."

Page 73: "A situation exists as it is assumed that habitats are currently at carrying capacity."

Page 72: "Once roads are closed to use, elk use increases to near normal levels."

Page 44: "Riparian zones are extremely important habitat because they are used to a greater extent by a greater variety of species than any other habitat."

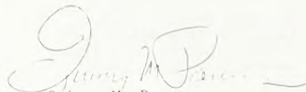
Page 44: "Old growth forests provide optimum habitat for a variety of animal species."

These statements imply a number of things. First, that there is a definite set of standards the BLM has established, which delineate good and bad levels of habitat maintenance. None of the statements made above, however, have been supported in the DEIS by actual direct documentation and, therefore, are misleading. Secondly, the inference that simplification of the environment is inherently bad, is a bad assumption. For example, when a field of weeds is turned into a field of corn, it is simplified but its habitat and food value are definitely increased. Lastly, most forest management activities are compatible and beneficial to most wildlife species. The exceptions are an important issue but should not be placed before economic and forest management considerations.

The DEIS recommends a cultural resource inventory on all acres involved in ground-disturbing activities. We do not support this action. Federal law requires that a survey be done only in areas likely to contain a significant cultural site or that activities cease when such a site is discovered. To require surveys on all lands is a very expensive and ineffective means of preserving cultural resources. In any case, the cost of those surveys should be borne by the BLM and not its licensees or contractors.

The O&C Act places forest production in the dominant role within the scheme of the Bureau's management of the O&C lands. Further, it is agreed that the act does not mandate exclusive use but instead requires management for other interests as well as timber supply. The inclusion of management policies for visual resources, exclusive wildlife habitats and expanded

riparian zones, we feel, has gone beyond the management need for other forest uses and begins to significantly erode the dominant role of timber production on O&C lands.


Quincy M. Powers
Vice President
Western Oregon Region

Page 79 (snag dependent wildlife)

Thomas et al. (1979) state that the lower the population level managed for, the greater the risk of excluding a species from an area. They continue by saying that management below the 40 percent of potential population level may be too low to maintain self-sustaining populations.

Page 75 (snag dwelling species decline)

BLM wildlife program targets for cavity dwelling species seek to achieve maintenance of viable populations thought to be at or above the 40 percent potential population level. The analysis was based on this premise.

Page 73 (carrying capacity)

The concept expressed is one generally accepted by practicing wildlife biologists and used in this instance as a baseline in the absence of specific population numbers.

Page 72 (roads and elk)

Marcum (1975) found that elk use following closure of logging roads increased until it about equaled that on otherwise similar unroaded areas.

Response to comments in Letter 47.

47-1 See response to common issue 5.

47-2 The acreage of initial planting is equal to harvest area less roaded area.

47-3 Harvest per decade in cubic foot volume would be constant for all decades for all alternatives until regulation is reached.

47-4 See response to common issue 4.

47-5 Nowhere in the VRM system is it said or implied that only an old growth stand is esthetically pleasing. Also, see revised Appendix A, O&C Forest Resources Policy, and response to comment 58-2.

47-6 The following references are the basis for conclusions in the DEIS regarding each specific comment:

Page 79 (simplification and diversity loss)

Thomas (1979) states that although even-aged management will produce a mix of successional stages in the forest, the individual stands have a low vertical diversity because of the comparative simplicity of the stand structure.

Page 44 (riparian zones)

Thomas et al. cite several authors drawing the conclusion that wildlife use riparian zones disproportionately more than any other type of habitat.

Page 44 (old growth optimum habitat)

Refer to citation of Franklin et al., page 44 in DEIS.

47-7 The quantity and quality of the food and cover elements required by forest wildlife is a direct result of the condition and arrangement of the forest vegetation in space and time. In the long term, timber management regimes which employ low minimum harvest ages (50 years) and other intensive management techniques will lead to a forest ecosystem with a significantly lower wildlife carrying capacity. This decrease is a result of simplified vertical (within stand) and horizontal (between stand) diversity, which is a product of the loss of stands 50 years and older. For species which depend upon stands in excess of 50 years to meet their life needs, the impact is both adverse and significant.

47-8 Costs of cultural resource surveys related to the forest management program are borne by BLM.

August 19, 1982

James Hart, District Manager
777 N. W. Garden Valley Blvd.
Roseburg, Oregon 97470

Dear Jim:

The purpose of this letter is to comment on the adequacy of the Roseburg Timber Management Environmental Impact Statement (Draft).

Review of the Environmental Impact Statement (EIS) reveals serious deficiencies in the analysis of the Proposed Action and the seven other alternatives. Also, the employment of SIMIX as a forest simulation model to determine allowable cut levels will yield results that are fundamentally deficient in economic considerations.

The National Environmental Policy Act requires that the EIS examine costs and benefits of the Proposed Action and other alternatives. The EIS goes to great lengths to identify the impacts to all aspects of the social and natural environment. However, the actual costs implicit in the Proposed Action are conspicuously missing. As an example, the Proposed Action contains allocations of over 30,000 acres for Spotted Owl habitat, Old Growth, and mature timber ecosystem preservation. After many somewhat complicated calculations, one can determine from the EIS that the setting aside of this productive forest land on 250 year rotations will cost the region \$9.5 million per year in gross revenue and earnings and 287 jobs per year. Why isn't this significant cost explicitly stated? More importantly, how does the BLM justify this foregone revenue and employment? As a public agency charged with managing the O & C lands for the benefit of the local communities, the Proposed Action appears incongruent with your objectives.

All of the alternatives presented in the EIS utilize SIMIX as a timber harvest simulator. SIMIX is a most inappropriate model for determining allowable cut levels on the Roseburg District. The vast majority of the timber on the Roseburg District is over mature. Managing over mature forest land under Sustained Yield-Even Flow model (SIMIX) is an unsuitable means of carrying out the legislative intent of the O & C Act of 1937. The principle of Sustained Yield should be interpreted as an overall objective; to manage for continuous productive forest land. It should not be interpreted as a command to manage the O & C lands in an inefficient and wasteful manner. The scheduling of timber harvests under the Sustained Yield-Even Flow model has produced a history of chronic unemployment and economic stagnation in Western Oregon's timber dependent communities. The Proposed Action will perpetuate this situation needlessly.

James Hart, District Manager
August 19, 1982
Page Two

50-2

The utilization of SIMIX fails to portray the actual costs and benefits of all alternatives, as required in the EIS process. According to the EIS (Appendix, page 127) "SIMIX is not designed to handle economic values or costs, and it does not seek out alternative schedules or strategies". Therefore, the Sustained Yield model (SIMIX) incorporates a zero interest rate into the harvest scheduling process. The outcome of this blatant disregard of economic criteria is evident in the forest simulation model's objectives. The purpose of SIMIX is to calculate the "highest sustainable allowable cut for each alternative", with a projected period of 400 years to "assure that the condition of no planned reduction in allowable cut can be met." Obviously, with a zero interest rate, the cost to the local population of a harvest schedule embodying a 400 year even flow level is insignificant. However, what is the actual cost in real terms of unnecessarily delaying liquidation of the BLM's over mature timber?

It is hoped that these comments will lead to a better analysis and display of the costs and benefits of each of the alternatives and an examination of harvest scheduling options.

Respectfully,

Ralph Saperstein
Ralph Saperstein
1784 N. W. Estelle
Roseburg, Oregon 97470

RS:bh

cc: Senator Bob Packwood
Senator Mark Hatfield
Representative Jim Weaver
Robert Burford

50-1

Response to comments in Letter 50

50-1 See response to common issue 4.

50-2 The comment refers not so much to SIMIX as to the policy on non-declining even-flow constraint. SIMIX does not:

- inherently handle costs and benefits
- incorporate economic analysis or optimization

SIMIX is generally recognized as a valid model given an even-flow constraint (refer to DEIS, Appendix C, page 127). The allowable cut determination is based on a nondeclining harvest level over time (See O&C Forest Resources Policy, Appendix A).

ROSEBURG LUMBER CO.

P.O. BOX 1088 • ROSEBURG, OREGON 97470 PHONE (503) 679-8741

ALYN C. FORD
Vice President

August 18, 1982

Mr. James E. Hart
Roseburg District Manager
Bureau of Land Management
777 NW Garden Valley Blvd.
Roseburg, OR 97470

Dear Mr. Hart:

This letter is in response to your request for input on the draft Timber Management Environmental Impact Statement for the Roseburg sustained yield unit.

Roseburg Lumber Co. is highly dependent upon the Roseburg BLM District for its timber supply. We operate plants at five separate geographic locations in Douglas County, which normally employ approximately 3,000 people. These facilities all draw wood from the Roseburg BLM District. In that our operations are extremely dependent on the federal government for thier timber supply, any change in the allowable cut has a tremendous impact on our future.

Roseburg Lumber also has a close historical relationship with the BLM lands, in that the bulk of our industrial timberlands are intermixed with the BLM patchwork ownership. Because of this situation, we are very much concerned about the land use and silvicultural recommendations contained in the various alternatives. Such programs will have a direct and long term impact on the manner in which our lands are administered.

I strongly recommend the selection of Alternative #2. This choice is based on the following reasons:

1. In Douglas County, the wood products industry provides jobs for more than 90% of the County's manufacturing employment. Because of this relationship with service and trade employment, any changes in the base wood industry employment has an amplified affect on the whole community.
2. The flow of O & C funds to various local government agencies is critical in the maintenance and growth of many key government services.

August 18, 1982

3. Under the O & C Act of 1937, the role of revenues from these timberlands have a unique position both from a congressional mandate, and in support of local social services. The Act established timber production as the dominant use on forest lands administered by the Bureau of Land Management. The law clearly states that the selling, cutting and regrowing of timber should be the dominant use on these lands, resulting in the objective of maintaining a stable economic base for local dependent communities.
4. This stable revenue base is certainly not the case today in the local Douglas County economy. Industry and communities throughout the Douglas County area are reeling as the result of the collapse of the national wood products market. Although this is hopefully a short term problem, a stable wood supply is critical for any near term recovery.
5. Local industry is going through a transition, both in terms of technology and wood supply. In the next 20 years, there will be a supply gap between the old growth and second growth timber stands as indicated in the Beuter study, which was part of the Forestry Program for Oregon (published in 1977). During this period, the need for a stable and reliable timber supply will be greater, in that the economy will be quite fragile.
6. Although Alternative #2 "emphasizes timber production", this management program more than meets the standards that have been established by various agencies relative to the protection of the watershed, wildlife, and other environmental and multiple use resource values.

During the decade of the 1970s, there was a period of experimentation, both in terms of environmental and forestry management concepts. Because of the availability of the forest resource, the philosophy has been to hold volume in reserve in order to ensure that non-timber resources were protected. As a result, the short term economic productivity of these lands was sacrificed.

Given the present economic situation, the clear mandate contained in the O & C Act, and the broader base of expertise that has been developed over the last decade, it is now time for these lands to contribute their full capacity to the needs of our community. Alternative #2 presents the proper compromise in meeting these various objectives.

In viewing the plan from a detailed standpoint, I would like to make the following points:

August 18, 1982

- 58-1 We share the general public concern about substituting a potentially unreliable level of funding for intensive forest management as a trade off for restrictions in the commercial forest land base. If the availability of these funds is restricted, which is quite probable in the near term, the impact of any loss in timber supply on an already strained economy would be catastrophic.
 2. There is a large void in the draft statement relative to the goal of proper coordination objectives with other landowners and agencies (pages 26-27). There is considerable discussion and analysis of management techniques relative to directives and guidelines established by federal and state agencies. But there is no consideration of the tremendous interaction between the private/industrial landowner and the Bureau of Land Management.
- Given the patchwork nature of the O & C land ownership, the manner in which these lands are managed has a significant impact on the adjacent landowner. This interaction effects land use, road access, and general forest management. Although the bulk of Roseburg Lumber Co.'s industrial forest lands intermix almost in their entirety with the Bureau of Land Management ownership, at no time were we contacted relative to the impact of this plan on our operations, or the potential impact on our management procedures on the BLM ownership.
- 58-2 This lack of coordination is specifically illustrated in certain land use categories. On page 83, there is a list of areas that qualify for visual resource management (VRM), and designated with high sensitivity levels. In this category, logging and forest management procedures are restricted in order to preserve certain esthetic values.
- For example, one area so designated is the Berry Creek Reservoir. When this area was originally proposed by the County as a watershed, there was a very clear understanding between small landowners, industry and the County. Existing forestry practices would be conducted as long as they were consistent with the Oregon Forest Practices Act, and did not result in degradation to the watershed. Suddenly, the BLM, without any prior consultation to adjacent landowners or County Planning staff, has in affect proposed an additional zoning overlay. In restricting commercial timberland on the O & C, you have also set the precedent for restriction on the operational capacity of lands intermixed with these holdings. A similar
- 58-3

August 18, 1982

- 58-3 situation is true on at least 30% of the proposed areas contained on page 83. I would strongly recommend that this superficial assignment of management restrictions on lands intermixed with commercial timberlands be reviewed. Roseburg Lumber would be happy to provide detailed input in such a process.

I hope, that in developing the final draft statement, the agency will use common sense in establishing the appropriate balance between various resource uses. In that the economic problems of the Douglas County area are so obvious and so critical, the selection of Alternative #2 represents the one sound approach in meeting the needs of both the environment and the community.

Sincerely,

ROSEBURG LUMBER CO.

Allyn C. Ford

ACF/bcm

Response to comments in Letter 58.

- 58-1 See response to common issue 2.

- 58-2 Of the visual resource areas listed on page 83 of the DEIS, forest management activity restrictions are limited to BLM recreation areas and State of Oregon designated scenic areas (segments of North Umpqua Highway 138, Highway 42, 227 and Interstate 5). Otherwise, mitigating measures and project design features as described in the DEIS provide for scenic values in such areas as Berry Creek Reservoir.

- 58-3 Management of intermingled private lands is controlled by State Laws and local land use plans. Refer to DEIS, Chapter 1, pages 27-29.

BLM's preferred land use alternative and other alternatives considered in the land use planning process were reviewed by the Douglas County Planning Department. The Preferred Alternative is believed to be consistent with Douglas County's Comprehensive Plan. BLM visual management practices are not intended to set any precedent for the management of intermingled private lands. Also, see response to comment 4-4.

DOUGLAS TIMBER OPERATORS
Suite 222, Pacific Building
Roseburg, Oregon 97470

August 18, 1982

Mr. James Hart, District Manager
Bureau of Land Management
777 NW Garden Valley Blvd.
Roseburg, Oregon 97470

Dear Jim:

The following comments pertaining to the Roseburg Timber Management Environmental Impact Statement (Draft) are submitted on behalf of the Douglas Timber Operators. As an association representing local forest product manufacturers, loggers and retailers, with substantial dependence on public timber supplies, our interest in planning for the future management of local forest lands is acute. Over 12,000 workers in Douglas, Coos and Lane Counties are normally employed by our members.

As we are all aware, the nation is experiencing the severest recession in decades. Local timber supply will have a profound effect on the forest industry's ability to provide prosperity and stability for the area. Therefore, BLM planning decisions can hold the key to local companies' likelihood of surviving the current recession and thriving once the economy turns around.

The Proposed Action, as described in the DEIS, has some serious shortcomings. The PA designates 52,000 acres of prime commercial timber

-3-

Another facet of the Proposed Action which deserves closer scrutiny in the decision process is the heavy reliance on intensive management to maintain allowable harvest levels. The Proposed Action will require an increase in funding of approximately 42% to meet intensive management objectives. While this increase may be feasible for the long-run, it is unlikely for the short-run, considering current reduced stumpage values and congressional unwillingness to provide supplemental appropriations. Your ability to carry out the proposed course of action may be in serious jeopardy. Any reduction or elimination of cultural treatments will in turn force a reduction in the allowable harvest. A similar situation in the Medford BLM District, where harvests had to be reduced over 20MM, demonstrates the reality of our concern. The most likely effect of the Proposed Action with its reduced land base and dependence on intensive management would be to meet the harvest objectives.

Alternative 2 offers a much more viable and appropriate plan for managing the Roseburg District. Alternative 2 provides for over 360,000 acres in the Intensive Timber Production Base which is over 27,000 acres more than the Proposed Action. The additional increase in annual sustained yield harvest of 18 million board feet will yield additional public revenues and worker earnings. In addition, Alternative 2 would produce over 300 jobs more than the Proposed Action.

The benefits of Alternative 2 are achieved without sacrificing non-timber resources and uses on the Roseburg District. Stream protection, visual quality and wildlife habitat is enhanced with an allocation of 24,786 acres. Alternative 2 will more than double the area designated for recreation with respect to current conditions. Most importantly,

land to constrained timber production. This vast acreage for Spotted Owl habitat, old growth and ecosystem preservation that will be managed on artificially long (250 years) rotations is an inefficient administration of the O & C grant lands and affront to the timber dependent communities adjacent to the Roseburg BLM District.

In light of the new direction from the Washington, D.C. office regarding the setting aside of productive commercial forest land for non-timber uses, revision of the Proposed Action seems warranted. The decision to remove 52,000 acres from the Intensive Timber Production land base was derived from insufficient and questionable research and knowledge. In addition, in 1981 the Oregon State Legislature passed House Memorial No. 1. In this resolution the legislature urged the BLM to "make certain every possible effort is made to preserve the intensive management land base for timber production purposes".

68-1

This statewide emphasis on preserving the land base for commercial forest land is not new. The Oregon Board of Forestry has established the state position in its Forestry Plan For Oregon. A basic objective of the program is "to maintain the maximum potential commercial forest land base consistent with other resource uses while assuring environmental quality". The Proposed Action is inconsistent with this objective.

Consequently, reductions of the managed timber land base are in direct conflict with policy and objectives from the BLM headquarters in Washington, D.C., the Oregon State Legislature, the Oregon Board of Forestry, local governments and the forest industry of Southwestern Oregon.

-4-

at the end of 10 years, over 140,000 acres of mature forest land will still be available for reclassification. This factor assures the option to provide adequate protection for the Spotted Owl and old growth ecosystems, should continuing research deem permanent land allocation necessary.

In order to provide scientifically sound analysis of key sections of the DEIS, DTO has retained the services of two independent consulting firms. Dr. Robert Vincent has analyzed the wildlife aspects of the draft. Mason Bruce & Girard, Inc. has reviewed the economic projections in the DEIS. The results of their findings are attached and should be considered as part of DTO's formal input to the DEIS.

Based on our review and the report of our consultants, DTO has concluded that in order for the BLM to concur with legal mandates and national, statewide, and local objectives the Proposed Action should be abandoned and Alternative 2 adopted. The BLM will have the full support of DTO in your efforts to appropriately revise the Proposed Action.

Sincerely,

DOUGLAS TIMBER OPERATORS

Lynn Herbert
Lynn Herbert
President

LH:cah

AN ANALYSIS AND DISCUSSION OF THE WILDLIFE-FOREST ASPECTS
OF THE ROSEBURG TIMBER MANAGEMENT DRAFT
ENVIRONMENTAL IMPACT STATEMENT

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prepared for
DOUGLAS TIMBERS OPERATORS

by
Robert E. Vincent, Consultant
August, 1982

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hatchery fish have a role in the fishery, for listing MFP Withdrawals by use, and for preparing a table of nonoverlapping resource allocation of forest land.

One major weakness seems to be conclusion forming contrary to the supporting and stated information.

I INTRODUCTION

The Roseburg Timber Management Draft Environmental Impact Statement is a major improvement over previously written EISs. Issues have been addressed, data presented, and alternatives analyzed in a comprehensive manner. The Timber Production Base is particularly important for, although BLM assumes funding will always be available for intensive management, this may not be the situation.

By far the largest acreage in the SYUs is withdrawn from the intensive Timber Production Base for wildlife habitat. A Constrained Timber Production Base through Modified Area Control harvest has merit over no harvest; nevertheless, acres allocated for constrained production should be examined carefully and constrained harvest applied sparingly. This analysis focuses upon those wildlife-land allocations that most reduce the Intensive Timber Production Base.

Subject areas emphasized in this discussion are (1) old-growth forests and spotted owls, elk, and corridors; (2) elk and road systems; (3) intensive forest management and wildlife; and (4) riparian areas. Generally, the analysis shows that, for this planning cycle, allocation of old-growth forest need not be carried out because a more-accurate, meaningful allocation can be made later with greater information and no individual resource will decline to any extent in the meantime. Also, literature and common knowledge strongly suggest that road impact upon elk use of habitat may be overemphasized. Broad condemnation of the impact of intensive forest management on wildlife is not justified, and the proposed riparian area management will adequately protect and enhance the many uses of streamside areas.

The BLM is to be commended for proposing the concept of Area Control Harvest, for considering a 250-year-harvest age of riparian and wildlife old-growth blocks, for managing the Tye Area with special consideration for elk, for realizing the possible wildlife use of non-forest lands, for recognizing that

II ALLOCATION OF MATURE AND OLD-GROWTH ACRES FOR WILDLIFE

The Roseburg BLM Sustained Yield Units (SYUs) contain approximately 423,896 acres in total. As an example of how the intensive forest management base is computed, Alternative 2 and Alternative 4 (Proposed Action) are examined. Land allocated for Planned Timber Harvest under Alternatives 2 and 4 is reached by designating acres for either no harvest or for constrained harvest.

Acreage Allocation	Alternative 2	Alternative 4
Total Acres	423,896	423,896
No Planned Timber Harvest	38,530	38,530
Physical Land Characteristics	32,530	32,826
MFP Withdrawals	5,704	5,704
Planned Timber Harvest	385,366	385,366
Constrained Base	24,786	52,047
VRM	3,682	2,646
Wildlife	21,104	49,401
Intensive Base	360,580	333,319

Thus, the difference of 27,261 acres between the Intensive Base Alternative 2 and the Proposed Action is the acreage allocated for spotted owls, old-growth blocks, and 80-acre blocks, in other words, the acreage of mature and old-growth forest for spotted owls and for old-growth corridors. VRM, bald eagle, osprey, raptor, and riparian acreage allotments are all the same between the two alternatives.

These constrained harvest acres of old-growth forest for wildlife, even with limited harvest under Modified Area Control, remove 18 MM bd. ft. from the annual timber harvest. Therefore, these 27,000 acres that grow 18 MM bd. ft. are significant and worthy of evaluation as to why they are placed in the Constrained Harvest Base. To illustrate the comparative magnitude of impact of 18 MM bd. ft. on local employment and earnings in Douglas County,

- 4 -

- 6 -

The permanency of spotted owls in small habitat units is unknown, but they are there and they have been counted with regularity.

8. Old-Growth Forest and Spotted Owl

Present status of the spotted owl population would have to be considered good in the SYUs. The Proposed Action is to protect habitat fully for 18 pair of owls, habitat that consists of a 300-acre, old-growth core plus an additional 900 acres with at least one-half older than 30 years. Through the 10th decade, this action would maintain the prescribed pairs of owls. The relationship between spotted owls and acres of old-growth forest is unclear. According to Table 1-5 (DEIS), if 1,000 acres were a minimum-habitat requirement, the spotted owl would not exist to the 10th decade under Alternatives 3 and 4, notwithstanding that 31,800 of old-growth forest would be extant. Under Alternative 7, no owls would exist by the 10th decade even with 70,000 acres of old-growth forest, whereas under Alternative 6 with 68,100 acres, 24 pair would be maintained. These relationships are inconsistent.

No projections are given for spotted owl populations at the end of the first decade so extrapolation must be done from the acres of old-growth habitat. The existing condition has a known habitat unit for each 2000 acres of potential habitat. Consequently, at the end of the first decade, all alternatives except 5 could be expected to maintain a minimum of approximately 35 pair.

Data on habitat requirements of spotted owl are limited and incomplete. Current available data are solely from the research of one individual. Confusion also exists between the original Oregon Endangered Species Task Force management recommendations and the proposed revision of the Oregon Interagency Spotted Owl Management Plan. Although the latter is only a proposal, not an accepted or adopted revision, even as a proposal the revision was to maintain the option of the additional acreage of old-growth forests for a 5-year period only.

Yet, this unadopted proposal is repeated and used several times in the DEIS.

Lack of data become awkward for the authors of the DEIS for it appears necessary to inject frequent "weasel" words because definitive data are absent. A management decision that impacts millions of board feet of timber harvest annually,

note the following:

	18 MM bd. ft. Timber Harvest	All Other Resource Occupations
Persons Employed	232	99
Personal Income	\$ 3,072,600	\$ 567,000

Three wildlife resource allocations comprise nearly all of the Constrained Base: (1) spotted owl habitat, (2) old-growth blocks that are overlapping or joint-use for all except 1,757 acres, and (3) 80-acre blocks that are nearly all single-use designation (9,415 acres, single-use; 1,167, overlapping-use).

A. Existing Situation

In contrast to some BLM Districts, the Roseburg District has large acreage in mature and in old-growth stands. Also, the District has a comparatively large spotted owl population. High amounts of these three permit flexibility in the planning process.

1. Mature Forest. The SYUs contain 79,800 acres (20%) in the 116-to-195-year-habitat age class, while all lands contain 121,500 acres (9%) of mature forest.

2. Old-Growth Forest. The SYUs contain 110,900 acres (27%) in the 196+-year-habitat age class, while all lands contain 234,100 acres (16%) of old-growth forest. Accordingly, mature and old-growth forest are not a scarce habitat-age class but total 190,700 acres or 47% of the Roseburg District.

3. Spotted Owl Populations. Current census effort has found 55 habitat units that each support a pair of owls, plus found 30 additional locations in the SYUs where spotted owls have been found occasionally. In addition, 63 pair of owls have been recorded on other ownership within the planning area. A total of 148 pair of spotted owls are known thus far to occupy habitat within the EIS area. Of the known 55 habitat units in the SYUs, only 4 were estimated to be in poor (less than 150 acres old growth) condition. Sixteen of the occupied habitat units have less than 300 acres of old-growth forest. Hence, 30% of the known locations supporting a pair of spotted owls in the SYUs are doing so in a habitat unit smaller than 300 acres of old-growth forest.

needs to be based on facts, not supposition. Phrases and words as "these may be . . ." (p.47), "in the opinion of the BLM district biologist . . ." (p.47), "applying extremely rough projections . . ." (p.72), "assuming that these recommendations . . ." (p.78), "based on the assumption that . . ." (p.79), "assuming," "indicates," "may be" (p.80), and "the cumulative effects on the northern spotted owl are difficult to predict as planning efforts by land management agencies are just beginning . . ." (p.80) express indecision. In addition, "no action would be taken until habitat management plans are completed . . ." (p.79) obviously show habitat management plans have not been formulated for wildlife areas.

Given the necessity of using these many indefinite words, given the statement that cumulative impacts on the owl are difficult to assess, and given the absence of wildlife-habitat management plans, the logical conclusion is that BLM needs additional planning time so that a decision of this magnitude is not being based on guesses and assumptions.

The same indefinite phraseology is used to disguise lack of hard data on older forest habitat: "the functioning of the old growth forest as a system, however, has not yet been studied in depth . . ." (p.42), and "there is no definitive description of the functioning of the old growth system and its importance to long-range timber production" (p.71). Again, the need to guess is shown by "habitat structure for all lands . . . cannot be accurately calculated" (p.44).

Confusion of the role and amount of old-growth forests is further compounded by the sentence on p. 71, "All alternatives except Alternatives 1, 2 and 5 would provide an adequate representation of the original old growth systems." Yet after 10 years, the timeframe of this Timber Management Plan, there is a 1% difference in the acres of old-growth forest under Alternative 2 and Alternative 3. In this situation where admittedly the function and importance of old-growth systems are not well known nor the amount accurately calculated, it is inconceivable that precise prediction could be made that Alternative 2 would not provide adequate representation while Alternative 3 with only 1% more old-growth habitat would provide adequate representation.

Replacement of younger forest with older forest is a basic premise of BLM planning as shown by Alternative 8, 80-acre blocks of mature timber, the corridor

68-2

68-3

68-5

68-4

system, and Modified Area Control. On the other hand, BLM cannot squelch the concept in their own thinking that old-growth forest is irreplaceable. Irretrievably lost does not apply to old-growth forest. This latter concept is expressed tacitly by "old growth habitat that would be irretrievably lost as long as those acres are managed intensively for timber production . . ." (p.72). Certainly the implied idea is that whenever intensive timber management were stopped, old-growth habitat would not be irretrievably lost but would be reformed as a natural consequence of succession and community development as expressed on p. 42 and p. 44. Moreover, if as assumed by BLM (p.73) that habitats are currently at carrying capacity, these new old-growth stands will support populations of those species that prefer old-growth forests.

Thus to sum up, the best planning action for the spotted owl may well be to take no action during this planning period for the following reasons:

- (1) At the end of the planning period covered by this DEIS, over 70,000 acres of old-growth forest will remain in the SYUs under all alternatives except Alternative 5.
- (2) Spotted owl numbers are comparatively high.
- (3) Confusion exists over minimum habitat requirements of spotted owls.
- (4) The relationship between owl habitat and older forest is unclear.
- (5) At the end of the planning period an adequate number of owls will remain even without special allocation at this time.
- (6) Lack of data on owls and their habitat necessitates the frequent use of non-specific phrases.
- (7) Habitat management plans have not been completed for SOMAs.
- (8) The function and role of the old-growth system is unknown.
- (9) Old-growth forest is replaceable and is a renewable resource

The spotted owl was classified as threatened by the then Oregon Department of Wildlife on January 10, 1975, and no species have been added to or removed from this classification since that date. At this time, other states and provinces have not given the spotted owl special designation. British Columbia, Washington, or California do not have specific management considerations for the spotted owl, and owls have the same legal status and protection as all other native nongame birds in these three states. The owl is not listed nor

seidom. An analogy could be made with an individual planting 100 acres in wheat each year just in case the United States should have a famine. Each year taxes are paid; seed is purchased; land is plowed and cultivated; the crop is sprayed, fertilized, and finally combined only to be discarded because the famine did not occur. Is survival cover worth the "just in case" cost?

68-7

The definition of survival cover for weather extremes is not precise. In the DEIS, mature and old-growth stands are always both used as meeting the structural requirements. Referring to 80-acre blocks of 120+ to 200+ year old stands, "These stands will also provide the stand structure (canopy closure and food resources) necessary to meet the survival cover needs of deer and elk during severe winter weather" (MFP-NU-WL p.11). So apparently mature forest (116-195 years) will meet survival needs and old-growth forest is not necessary. In addition, RAA-NU-WL (p.18) stated about severe winter weather cover, "Stands aged 50 to 200 years old will fulfill these needs efficiently, though older stands, if present, are preferred." On p. 103 in the same document, the following statement is written, "Although younger stands (80+ years) will provide summer thermal cover needs for deer and elk, the stands aged 200+ years old are needed to totally fulfill the animals' need for cover and emergency forage during periods of severe cold, wet or snowy weather conditions." This statement by BLM says (1) that 80+ year-old stands will meet summer thermal cover needs, (2) that cold and wet are also a reason for survival cover, and (3) that the objective is to totally fulfill all needs of the animals. Whether the stands are 50+ or 80+ years old, these are far younger than old-growth stands. Also, for an animal whose supposedly optimum habitat is Coast Range rainforest, it is difficult to imagine rain being a problem. "Elk appeared indifferent to average coast range winter weather . . ." (deCalesta and Witmer 1981 p.38) and furthermore elk used cover less on adverse winter days than on mild winter days. Mandel and Kitchen (1979) also saw elk often bedding or standing in the open during heavy rain. To totally fulfill animals' habitat requirements for all emergencies is impossible. The possibility of a more severe weather event, a larger forest fire, a greater volcanic eruption, a new disease outbreak, a more efficient competitor, a higher flood, etc., is always present. Habitat needs for these rare contingencies cannot be totally met even with unrestricted cost and unrestricted resource allocation.

has it been proposed for listing under the Federal Endangered Species Act. "The species (spotted owl) situation does not meet the Endangered Species Act of 1973 definitions of either Threatened or Endangered" (U.S. Fish and Wildlife Service 1982 p.24).

C. Old-Growth Forest and Elk

Elk are unevenly distributed throughout the SYUs with a concentration in the Tyee Area of the Drain Unit. The elk population of 660 provides an average annual harvest on BLM land of 54 elk and an annual expenditure of 2,738 hunter days (Roseburg District PAA). Over one-half of the harvest is from the Drain Resource Area. As a result, elk hunting is a minor resource use in the SYUs and needs to be viewed in prospective with dollars and people involved in other resource uses.

The relationship between elk and old-growth forest is unclear and ill-defined. If available, elk may well use old-growth stands; on the other hand, the requirement of old-growth forests for elk survival is probably mainly a "smoke-screen." To many, common knowledge examples exist of elk herds thriving in almost total absence of old-growth forests: Tillamook Burn, Clatsop Plains, Millicoma Tree Farm, etc. The real issue of elk habitat is obscured by the use of a large, popular big-game animal as a surrogate for old-growth forest protectionism.

68-6

On p. 46, 73, and 74 (DEIS) mature and old-growth forests are designated as necessary components of elk habitat. The essential ingredient provided by these habitat types is survival cover that is defined in the glossary in relation to severe winter storms of heavy snow fall. Structure of mature and old-growth forest provide thermal cover and limited food in close proximity. In contrast to the glossary definition (p.74), extreme summer temperatures are also considered part of survival cover.

Climate in the SYUs is temperature marine with warm summers and mild, wet winters. Precipitation is mostly rain and "snow is generally short-lived" (p.32). Under such mild weather conditions, "extremely severe winter and summer weather . . ." (DEIS p.74) would occur rarely. Critical evaluation is essential if resource allocation for extreme weather of a habitat type is needed so

68-8

Thus, survival cover (summer and/or winter?) can be met by stands 50, 80, 120, or 100+ years of age depending upon definition and criteria used in the DEIS. This highly specialized survival cover could be a possible essential habitat element only under rarely occurring climatic events. Elk are not hindered enough to move by snow depths less than 18 to 24 inches (Beall 1974, Legee and Hickey 1977, Martinka 1976, Schoen 1977). Snow depths of this or greater magnitude are rare and short-lived for southwestern Oregon.

Currently, 60% of Tyee Area is in 80-year or older forest habitat (DEIS p.45). Actually, whether elk must have or whether elk can do well without older forest becomes a moot question with so much mature and old-growth forest. This is recognized by BLM for "no impacts (on elk) are expected in the short term . . ." (DEIS p.79). Short term is defined as 10 years (DEIS p.64). In addition, Table 3-11 indicates that no change in elk population will occur in the second decade either. Under any of the alternatives, elk habitat will not be changed enough to impact elk populations for at least 20 years.

In the Tyee "none of the lands scheduled for long rotation under modified area control are located in this area. . . ." (DEIS p.74). Then by comparing Table 3-11 and Table 3-9, one interprets that mature and old-growth forest can be reduced by approximately 60% without changing the elk population.

Further support comes from Schoen (1977), who found that an elk herd in Western Washington avoided old-growth stands in winter; from Harshman and Jubber (1980), who found that elk survive during periods of heavy snowfall in the Western Oregon Cascades in 80+ year-old stands; and from deCalesta and Witmer (1980), who are cited as proof of requirement of old-growth forest. In fact of the latter, the research year had only a trace of snow making meaningless a conclusion that old-growth stands were essential to provide thermal cover and forage under extremely heavy snow conditions.

Summer temperature relationships between elk and vegetation are complex, much more so than air temperatures as measured by deCalesta and Witmer (1981) in just the two temperature extremes of old-growth stands and recent clearcuts. Elk, by their behavior, adapt to temperature (Beall 1976). They move less in midday (deCalesta and Witmer 1981 p.21,31; Schoen 1977 p.132) with a daily

activity of feeding morning and evening and retreating to cover in midday (deCalesta and Witmer 1981 p.37). Thus, high-midday air temperature in recent clearcuts really have minor impact on elk. Not only may cooler mid-summer air temperatures be found in old-growth stands but in younger-growth stands as well. Second-growth stands may significantly moderate weather conditions with the dense canopy reflecting solar radiation, thereby creating a micro-climate more favorable for elk (deCalesta and Witmer 1981 p.32,35). Elk do respond to air temperature. Respond is the key. Elk are intelligent animals found over a wide range of topographic and climatic conditions. Normally, they are not found at midday in midsummer in the midst of a recent clearcut where air temperatures are 100-plus degrees F. (Pedersen 1976). On the contrary, if old-growth stands, dense, young-growth stands, hardwood stands, or north slopes are available, elk will be in the shade. The shade need not necessarily be provided by old-growth stands.

As a result of the large acreage of mature and old-growth forest in the SYUs and of the need to define habitat requirements more precisely, no immediacy exists to allocate resources for elk survival cover at this time. Special timber harvest regulations proposed for the Tyee Area such as smaller clearcuts, distance to cover, cover width, road closure, etc., will enhance populations in this significant elk area.

In conclusion, enlightenment is provided by the importance of the Tioga Management Unit of ODFW to Roosevelt elk kill in Oregon. It is a "premier area as it contributes an average of 51.5% of the Roosevelt elk kill. . . ." (in Oregon) (RAA-DL-WL p.21). This Unit also provides over half of the elk harvest in the Dillard Resource Area. The same paragraph continues, "It should be noted however that the bulk of the recorded kill came from lands owned by the Weyerhaeuser Company and not those (BLM lands) within the planning unit." These private forest lands that grew most of the elk were not mature or old-growth forests but lands that had been clearcut over the past 25 years.

D. Mature and Old-Growth Forest Corridors

Although it is presented in an off-hand, low-profile manner, apparently a corridor system is envisioned for the SYUs. Attempts to overlap and joint-use

land allocated for corridors is commendable and has been partially successful. The basic question is the concept of corridors. True, the habitat blocks are "located in loosely arranged corridors . . ." (DEIS p.124) or "generally located within a corridor . . ." (DEIS p.15). Still, 1,757 acres of old-growth forest and 9,415 acres of mature forest are single-use allocations solely for corridors. Comparing location of large blocks of old-growth forest with location of spotted owl areas gives the impression that some old-growth areas were chosen not as the best owl habitat but to fill corridor gaps.

Large old-growth blocks (approximately 600 acres each) are cited (MFP-NU-WL p.19) as a requirement for spotted owl, fisher, marten, and possibly cougar. The fisher population level is at or near zero at the present time (RAA-DL-WL p.41) and may have already passed from existence (RAA-DL-WL p.95). Both the marten (RAA-DL-WL p.41) and cougar (MFP-NU-WL p.19) commonly range broadly across upland forests ranging in age from clearcuts to old-growth stands. Only the spotted owl remains, and its habitat requirements have been discussed. Elk are doing well under a fragmented forest-island habitat that the corridor system supposedly would correct. From RAA-DR-WL (p.19) the following sentences are quoted, "The present distribution of elk in western Oregon is characterized by population concentration centers which occur as islands across forest lands of varying seral stages. The lack of elk in some seemingly acceptable habitat has remained unexplained."

At this time the proposed corridor system is a test or experiment and as yet an essentially unplanned experiment. Wildlife habitat management plans and PAA analysis have not been completed for corridor lands. The option to form a corridor system will never be foreclosed because mature and older forests are renewable. Extinction is not an issue for no species in the SYUs are found only in the Roseburg District or are threatened by extinction. During this time of recession and budgetary restraint, a corridor system is a costly experiment with little chance of fulfilling the intended purpose because of the checkerboard nature of O&C lands.

E. Summary of Old-Growth and Wildlife Acreage

What is sufficient old-growth forest to meet wildlife needs is not easily

answered. The DEIS makes the statement (p.74) that only Alternatives 6, 7, and 8 would maintain, over the long-term, populations of animals whose optimum habitat is mature and old-growth habitat. From Table 3-9 this would be interpreted that currently enough is known about old-growth species to say that 100 years from now 70,000 acres of old-growth forests will be required. The accuracy of this long-term prediction based on the present scant data is highly questionable. Elk populations would only decline 20% (Tab.1-5) in Alternatives 4 and 5. Would this be past the population threshold and elk would cease to exist in the SYUs? Eighteen pair of spotted owl (Tab.1-5) would remain at 100 years under Alternatives 3 and 4. Is the spotted owl not then a good old-growth indicator species? From what is known it has larger and more stringent old-growth habitat requirements than other species. According to the DEIS (p.71), Alternatives 3 and 4 would also "provide an adequate representation of the original old-growth systems." Yes, prediction of habitat for wildlife populations a century in the future is filled with possible errors.

Hence, whether for spotted owls, elk habitat, or corridors, there seems to be little prudent support for allocating Commercial Forest Land to a Constrained Timber Production Base for wildlife purposes. The amount of forest timber harvest lost under the Constrained Base is significant. This EIS for the Timber Management Plan "is considered applicable for the decade . . ." (DEIS p.26). At the end of the ten-year period a more accurate assessment of wildlife needs will be possible. Unreasonable demands have been placed on wildlife biologists the past five years to categorize and quantify wildlife habitat. Studies of old-growth systems themselves have been recent (DEIS p.42), let alone studies on animals and relationships within the old-growth system. Many of the guesses, best estimates, assumptions, district biologists' opinions, etc., can in a decade be sound biological fact with resultant sound resource allocation. Meanwhile, during the next decade habitat alteration will not be extensive enough to harm knowingly any species or community.

III ELK AND ROAD SYSTEMS

Harrassment of wildlife (elk) by vehicles is at this time a confusing, little understood subject. Research does present conflicting results, but more importantly the visual experience of many people who regularly see elk along major highways makes it difficult to convince the public that elk use is significantly affected within 1/4 mile along each side of lightly used logging roads. The following quotation from the August 8, 1982, Oregonian illustrates this point:

Tourists are getting an eyeful on coastal highways and byways this summer, as Roosevelt elk wade across the country scenery amid farms and cattle.

The accompanying photograph, for example, was taken along U.S. 101, a mile south of Tillamook, where this four-point bull has adopted a herd of young dairy princesses.

It's not common, but neither is it unusual, for elk bulls to act this way, say biologists. The paternal instincts wear off with time, as the elk realizes his adopted charges don't really care about him one way or another.

The Reedsport herd has also been regularly hanging around its usual field haunts alongside Oregon 38, a few miles east of town.

Wildlife biologists also seem to have a difficult time accepting elk avoidance of habitat near roads. Hershey and Leege (1976) used truck and trailbike to observe elk on eleven of eighteen observation routes and more recently BLM and ODFW employees Smithey, Wisdom, and Hines (1982) conducted a study on Roosevelt Elk and Black-tailed Deer Response to Habitat Changes Related to Old-growth Conversion in South Western Oregon. The study was conducted by road counts. If elk avoid using habitat near roads, roadside census techniques would be highly inaccurate.

The scientific literature is conflicting. Studies concluding that road harrassment is significant are summarized by Irwin and Peek (1979), Lyon (1979), Pedersen et al. (1979), and Perry and Overly (1976). All of the studies referred to were on Rocky Mountain elk east of the Cascade Range where "topography

is extreme, with deep valleys and high steep ridges . . ."(Perry and Overly 1976 p.62). In addition to larger topography, vegetation is more sparse in these areas than in the Coast Range. For example, old-growth stands in Northern Idaho had a visibility radius of 100 feet while second-growth stands had a visibility radius of 40 feet. Hence, young-growth stands were used as hiding cover more than other vegetation types (Irwin and Peek, 1979). Ward (1976) concluded that "as long as the vehicle is moving, elk apparently feel relatively safe"(p.38). In this particular four-year study in Wyoming, elk were seen or telemetry located 44 times from the road to 200 yards, 34 times from 200 yards to 440 yards, 56 times from 440 yards to 880 yards (twice the distance), and 57 times from 880 yards to 1760 yards (four times the distance). According to this report, per amount of area, elk used area near the roads more than area farther away. The conclusion of a study on roads and wildlife in Arizona was "In late summer and fall, traffic increased significantly. However, it is doubtful that this increase has an adverse effect on wildlife production . . ."(Burbridge and Neff 1976 p.56). Schoen (1977) found heavy use of roads as travel routes in western Washington during the winter whether the roads had been plowed or not and also stated, "Wapiti have frequently been observed within 300 feet of a moderately used road, separated by cover, and appeared to show little concern for vehicular traffic unless a vehicle stopped . . ."(p.199). To continue from this same western Washington study, "on the whole, especially in areas where dense vegetation provides cover and/or impedes travel; it appears that wapiti will use low traffic or closed roads as travel lanes or trails . . ."(p.200). Schoen also noted that displacement movements by current logging operations were usually one-half mile or less and that elk were often observed within one-half mile of active logging when shielded by vegetative cover or topography. Elk in Olympic National Park were observed by Jenkins and Starky (1980) to bed often in spruce-hemlock stands within audible range of human voices and traffic and appeared to be accustomed to activity on the road.

Some interruption of normal elk behavior due to vehicular harassment does occur under certain circumstances. Pedersen (1979, 1979b) and Black et al. (1976) have road management recommendations that are being incorporated into the Tye Area to reduce conflict. Hiding and escape cover (DEIS p.45) will

IV INTENSIVE FOREST MANAGEMENT AND WILDLIFE

intensive forest management is the basic premise of the Proposed Action: 249 MM bd. ft. from 333,319 acres of Commercial Forest Land compared to the No Change Alternative with 201 MM bd. ft. from 390,984 acres. Wildlife and their habitat will be influenced by intensive forest management, yet as a whole the impact will be localized and will not be severe. Important habitat areas for special uses or special species are protected by MFP withdrawals in all alternatives except 5. Additional protection for other specialized uses is allocated as Constrained Timber Production Base in all alternatives except 1 and 5. Not every forest management treatment will be applied to every acre of Commercial Forest Land (DEIS p.19), and as an example Alternative 2 has 63,000 acres that are not in the intensive timber harvest base. It is worthwhile examining some of the forest treatments and the result of these treatments on wildlife.

A. Slash Burning

Slash burning eliminates most live vegetation and associated animal populations for a short time. Nevertheless, "this would last less than one growing season, after which a vigorous growth of grasses and forbs would appear and animal populations adapted to early successional-stage vegetation would be reestablished" (DEIS p.76). Forage for elk and deer is generally increased and woody material that obstructs large animal movement is reduced. As a whole, burning impacts are very short term with subsequent enhancement for important game species. The trend toward spring or fall light burns reduces impact.

B. Artificial Regeneration

Artificial regeneration usually accelerates succession through early stages, but since cutting will continue, other acres will be continuously beginning early succession. A rotating source will be available. Impact is summarized by "the artificial regeneration program on BLM-administered lands is not expected

be the most abundant habitat type on the SYUs in future years (DEIS App.F). Proper road and vegetation management would certainly narrow the impact zone of roads on elk. "Losses to this cause (harassment) would not be expected to be large or significant to the population as a whole. . ."(DEIS p.72) could readily be applied to the use of elk habitat and roads.

In brief, road systems may reduce elk use of nearby habitat under open, long-airst-distance, high-traffic conditions. At the same time, smaller topography, rapid revegetation, abundant hiding cover, and low-vehicular traffic permit elk use nearer to road systems. Elk with a comparatively large home range can easily move away from a road during periods of traffic or during the day and then move nearer the road at night or low-traffic times to use the habitat. Not only do 13-to-30-year-old trees provide hiding cover, but darkness (Pedersen, 1976) is also a ubiquitous reliable hiding cover. Besides being hiding cover, darkness is also thermal cover as shown by the statement, "Elk used clearcut areas at night but preferred the security and milder temperatures of dense conifer stands during the day" (Edgerton and McConnell 1976 p.5). Schoen (1977) found that elk actually preferred open regions (clearcuts) at night.

Broad generalized statements that elk use is reduced within one-half mile of roads and that up to 75% of an area would have reduced elk use because of roads are extrapolation of data from a different elk in a different topography, in different vegetative types, and in different climates than the Coast Range. Management of roads and of forest treatment practices and applying what is known about elk behavior to a specific area (as the Tye Area) can greatly limit road-elk conflict.

to significantly affect the stand or species composition of the entire Roseburg Area"(DEIS p.70).

C. Precommercial Thinning

Precommercial thinning is credited with increasing bird and small mammal use but hindering deer and elk movement. Crouch (1974) is the reference cited in the DEIS for the conclusion that slash impedes deer and elk movement. The article is entirely on deer; the word elk is not even used so this reference is not applicable to elk. On the other hand, Swanson (1970) does write that sites with moderate amounts of logging debris generally received most elk use and those with heavy amounts, the least use. Areas of patchy debris distribution had more use than sites with uniform debris distribution. Whether or not precommercial thinnings present a major obstruction to deer or elk would depend mainly upon the pre-thinning density of the stand. Precommercial thinning after trees are too large (15 years?) or on extremely dense stands (2,000 stems per acre) can restrict potential habitat use. Berg (1969) noted that slash from precommercial thinning was quickly beaten to the ground and in 2 to 3 years the fine material is decomposed enough so that slash debris is not a problem. Since only an average of approximately 1% of the SYUs acreage would be precommercially thinned in any one year, it would not cause a significant habitat impact.

D. Fertilization

Fertilization proposed at 10-year intervals with impacts lasting for an average of 7 years (DEIS p.70) will increase growth and palatability of many plant species (DEIS p.77). This will provide additional forage for wildlife and will hasten the decomposition of thinning slash.

E. Commercial Thinning

Commercial thinning, between 30 and 60 years, that removes 30% to 40% of the basal area is discussed in the DEIS as resulting in lower deer and elk populations. Edgerton (1972) and Edgerton and McConnell (1976) studies in northeastern Oregon are cited. Not all research has reached the same conclusion. Partial-cuts were more acceptable to elk than clearcuts in western Montana (Marcus 1976); in northern Idaho, stands treated by shelterwood method produced nearly

as much herbaceous cover as clearcuts (Irwin 1976); in Arizona, selective cutting increased understory vegetation for 11 to 15 years (Reynolds 1962); in northeastern Oregon, timber stands with less-dense cover were used as forage areas (Pedersen 1979); in western Washington, elk during the summer used open and sparse canopy habitat-types in the same proportion in which they occurred while closed canopy habitats were avoided (Schoen 1977).

Thus, a total negative impact of partial-cuts on elk and deer is questionable. The habitat type, the location, the climate, the adjacent land use and other variables must be considered. Under many situations commercial thinning may be more helpful than harmful to wildlife. The balance between forage and cover habitats and available supply of both along with the ability of deer and elk to move between habitats in order to maintain this balance is complex. An overall negative influence upon wildlife is not supported by existing biological data.

An impact of commercial thinning upon selected birds is also indicated in the DEIS. The authority cited is Franzreb and Ohmart (1978), a study in Arizona that compared bird life in an area before and after logging. Before logging, density was 896 trees per acre; after logging, density was 268 trees per acre. Even though the total bird population was far smaller in the partial-cut area, thinning led to an increase in tree-species diversity and no change in bird species diversity. So tree thinning reduced total bird population but not the number of bird species. In a study in New York where 25%, 50%, 75%, and 100% of the trees were removed by logging, Webb et al. (1977) concluded that no bird species was eliminated by logging and that "numbers of species and diversity indices were higher in logged areas and were positively correlated with increased logging intensity" (p.32). Areas with 25% and 50% tree removal would be comparable to commercial thinning. Mauer et al. (1981) noted that the difference in bird populations between a selective-cut area and a mature forest was the addition of early-regrowth adapted species to the already present mature-forest adapted species. The two-bird communities remained very similar. From another study the conclusion was "in summary, we found few differences in the total density or richness of the breeding birds of a hardwood forest that was affected by several forestry practices, including clear-cutting,

managed treatment. Two statements in the DEIS are worthy of note on this subject. Intensive timber management practices will not eliminate hardwood trees, shrubs, and herbaceous vegetation (p.72), and "vegetation which is disturbed or destroyed by timber management activities would eventually be replaced by other plants of the same species and natural succession would restore community structure until the next harvest stage"(DEIS p.71). Therefore, treatments may alter vegetation, but natural succession will return the same species to the treated areas.

strip cutting, and thinning" (Freedman et al. 1981 p.310). Obligate forest birds had intermediate mixtures in thinned plots where thinning was removal of 45% of the basal area. Szaro and Balda (1979) recommend that only 30% of the basal area be removed to maintain and/or increase bird populations in a Ponderosa pine forest.

Commercial thinning is also credited with impacting nesting of Cooper's and sharp-shinned hawks. Jackman and Scott (1975) list seven out of ten sharp-shinned hawk nests as being in young, even-aged conifer stands with single-layered canopies while Cooper's hawks nested in Douglas-fir sites with a mean-stem density of 217 per acre. The latter density of 217 trees per acre (approximately 15 feet apart) is not a particularly dense stand. In fact, this after-thinning tree density (approximately 200 trees per acre) is nearly the same density used in the DEIS to indicate that commercial thinning is harmful to accipiter nesting habitat. Similarly, the other reference to indicate commercial thinning harms bird habitat (Franzreb and Ohmart 1978) had an after-thinning density of 268 stems per acre. The logical conclusion is that the thinned forest habitat in the latter has more stems per acre (268) than the dense (as referred to in the DEIS p.74) habitat (217) in the previous reference. In other words, density is relative.

Commercial thinning of 20% to 50% of the basal area can alter forest habitat. But as has been shown by the previous references, the impact may or may not occur. It may be positive or negative. It often is slight. And it is species specific, but overall does not eliminate species. Obviously, broad statements that commercial thinning has negative impact are not supported by biological evidence. Also, to be remembered is that on an average only approximately 0.1% of the Timber Production Base will be commercially thinned each year.

Intensive forest management treatments will, as a whole, not significantly impact wildlife. Animals will temporarily compress or expand home ranges and increase or decrease population levels over the short term as habitat is available. Wildlife is adaptable and is capable of moving to avoid or to use changing habitats whether the habitat is changed by succession or by

V RIPARIAN AREA MANAGEMENT AND FISHERIES

Riparian areas and their management as proposed under Alternatives 2, 3, 4, and 7 will adequately meet the many uses of the streamside acres. The 18,332 of riparian, plus 3,682 acres of VRM II, plus 2,772 acres for osprey and heron provide 24,786 acres that are essentially riparian area. In addition, the 2,912 acres that are completely protected for bald eagle would also be mainly riparian area. The small acreage proposed for clearcut and partial-cut would not disrupt the integrity of the riparian system and its many functions while still permitting multiple-use in the form of limited, regulated timber harvest. Sediment would be trapped by the riparian areas under Modified Area Control as indicated (DEIS p.68), and no increase in stream water temperature would be expected as indicated on p. 78. Forest harvest along first- and second-order streams is cutting vegetation that is more like upland habitat than riparian habitat (DEIS p.75); hence, possible impact is lessened.

Habitat improvements of various types as suggested in the MFP-Fisheries will improve the instream fishery habitat and blockage removal will open new habitat. Much of the low summer water flow is a result of domestic and agricultural use over which BLM has little control.

The summary statement on environmental consequences (DEIS p.79) does not seem to agree with data presented. Fish populations would be expected to decline under Alternative 1, 2, and 3 because of increased temperatures and sedimentation, and under Alternatives 4, 6, 7, and 8 fish populations would increase. In contrast, the DEIS (p.78) states, "Water temperatures would not increase if Alternatives 2, 3, 4, 6, 7, or 8 were selected." The difference in amount of sediment between Alternatives 3 and 4 is only 3%. With the current state of the art, it is impossible to predict the influence of sediment upon fishes with anywhere near a plus-or-minus-3% accuracy.

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In addition, the statement (DEIS p.75) that the proposed management of riparian areas for Alternatives 2, 3, 4, and 7 would substantially alter riparian habitats can be questioned. Carefully controlled partial-cut (and other management restrictions) on 6% of the total riparian acres and clearcutting of 0.07% annually could hardly produce substantial alteration on the whole riparian area. The proposed riparian areas and their management under Alternatives 2, 3, 4, and 7 will maintain and enhance terrestrial wildlife, snag-dependent species, water quality, streambank protection, and fish populations.

VI CONCLUSIONS

- (1) BLM is commended for considering and applying some innovative management and for the improvement of this DEIS over previous Environmental Statements.
- (2) Acres allocated for the Intensive Timber Production Base are of prime importance as the foundation of timber harvest.
- (3) Acres removed from the Intensive Timber Production Base under all alternatives except 1, 2, and 5 are major and significant.
- (4) The SYUs presently have 47% of the area in mature and old-growth forests; this acreage will remain high under all alternatives through the first decade.
- (5) A comparatively high number of owls exist in the SYUs and will remain high through the first decade.
- (6) Much is not known about spotted owls and about old-growth forests with the consequence that the relationship between wildlife and old-growth is unclear.
- (7) The spotted owl is not listed nor has it been proposed for listing under the Federal Endangered Species Act. In fact, the FWS says that the spotted owl would not qualify for Federal listing.
- (8) For the next decade, allocation of resources solely for the spotted owl seems unnecessary and ill-advised.
- (9) It has not been shown that elk must have old-growth forest as survival cover. Because elk are adaptable, no decline in harvest is projected during the next two decades.
- (10) During either summer or winter, elk respond to weather conditions by diurnal or longer movements to locations that fill their temperature needs. These cover needs can and often are met by habitat types other than old-growth habitat.
- (11) A proposed wildlife corridor system has little chance of functioning because of the checkerboard nature of BLM lands.
- (12) A corridor system is a costly and essentially unplanned experiment.
- (13) For any of the reasons reported in the DEIS, there seems little prudent support for allocating old-growth forest to a Constrained or Non-harvest Base for wildlife purposes.

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- (14) A generalized statement that elk-habitat use is noticeable reduced by logging road systems is not supported by common knowledge nor by the literature. Road harassment impacts may be much less than presented in the DEIS.
- (15) Intensive forest management may be either helpful or harmful to wildlife habitat. Negative influence, if present, is nearly always short-lived and localized.
- (16) Succession will, over time, return the same plant and animal community to a management-treated area. As a result, old-growth forest is a renewable resource.
- (17) Acres allocated and management proposed for the riparian areas will adequately protect and enhance the many important uses associated with streamside and downstream areas.

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August 20, 1982

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Dear Mr. Ragon:

This is our review of the Roseburg Timber Management Draft Environmental Impact Statement. It contains our analysis based on your request to examine the relative economic efficiency of specific alternatives and possible intensive management funding problems the BLM might face when implementing its preferred alternative.

We believe this draft environmental statement shows considerable improvement over other BLM environmental statements we have reviewed. The BLM staff at Roseburg was very helpful in providing useful information and answering our requests. If you wish we will be willing to answer any questions or clarify any points for the BLM about our analysis.

Summary and Recommendations

1. Current low timber sale contract prices and delays in harvest due to depressed wood products markets indicate the BLM's forecasted revenues in 1984, 1985 and 1986 are too high. Projected management costs may exceed 25 percent of such reduced

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revenues in these three years, thereby causing a reduction in the management expenditures which support the higher level of cut.

Recommendation - The BLM should carefully evaluate potential income levels and projected costs and be aware of potential funding problems. Selection of Alternative 2 would alleviate this possible problem by maintaining a larger land base.

2. A comparison of first decade management costs between Alternatives 2, 4 and 5 show that the costs per MBF of harvest are lowest for Alternative 2. Also, we show that intensive forest management costs are a small percentage of the total budget. A small change in the funding level could substantially impact the intensive management program. Under the preferred Alternative 4 such a reduction could cause the harvest level to fall below recent past levels. This is not true for Alternative 2.

Recommendation - Select Alternative 2.

3. The benefit/cost ratio of first decade management is higher for Alternative 2 than Alternative 4. The effects of intensive management are highly significant. Without intensive management the Alternative 2 benefit/cost ratio would drop from 8.5 to 1 to 6.3 to 1. The intensive management program in Alternative 2 results in an increased annual allowable harvest of 89 million board feet. This would generate an additional \$175 million in the first decade on an expenditure of about \$6.6

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Recommendation - The BLM should reexamine the purpose and usefulness of SEV's in preparing the plan and limit their presentation in the EIS to a few critical values or regimes as they relate to the final selection of management regimes. SEV's should be determined with a 4 percent discount rate which gives greater weight to more distant values and costs, thus reflecting government's concern for future generations.

Financing Intensive Management

There is a critical relationship between forecasted timber revenue and estimated timber management budgets on these O & C lands. Management on O & C lands is traditionally financed from a share of the stumpage receipts. Furthermore, current federal budget deficits are forcing agencies to place greater emphasis on the efficiency of alternative investments in order to justify expenditures regardless of source of funds. This situation is further complicated by the fact that current timber sale contracts are not being logged in a timely fashion due to the depressed markets, and some may not be logged or will be extended.

Because of this critical relationship we are concerned about BLM's preferred alternative which relies on intensive management expenditures for maintenance of a high level of harvest volume. Table B-2 on page 116 of the DEIS significantly overstates both the revenue and cost levels that can be expected during the next 10 years. First, the forecast revenues for 1984 through 1987 appear to us to be too high. If one assumes an approximate 3 year lag between timber sale date and the harvest date, the har-

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million. If funding for intensive management were not available an additional 176,000 acres of naturally grown forest would be needed to sustain the same harvest.

Recommendation - The intensive management program is a critical part of any management program on the Roseburg District and the funding necessary for implementation should receive first priority.

4. The costs per acre for reforestation reported by the Roseburg District are significantly higher than those of other land managers in the area. Other costs per acre of management practices are more in line.

Recommendation - The Roseburg District should institute a program aimed at cost reductions on all reforestation activities.

5. The land base is very important as a basis for sustained increases in harvest levels on the Roseburg District. Lands proposed for management under an extended rotation must have 5 times more area to support a one million board foot annual harvest level than under an intensive management regime. We recommend that the BLM should use other means than extended rotations or use rotations shorter than 250 years in order to provide for other resource values.

6. The Soil Expectation Values (SEV) contained in the environmental statement were not used in selecting management regimes, or if they were, other unstated criteria were controlling selections. Also, we question some of the methods used and are concerned about the implications of the low and negative values.

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vest values of \$302 per MBF during 1984 are far too high. The average price of timber sold on the Roseburg District in 1981 was \$259 per MBF and to date in 1982 the average price is \$130 per MBF. These are the sales that will be cut and paid for during 1983 and 1984.

Also, the harvest levels shown in Table B-2 overstate what reasonably could be expected to be harvested during 1984 to 1986. The BLM will not begin to sell its higher proposed allowable harvest volume until 1984. Consequently, none of this increased volume will be harvested until about 1987.

The estimated forest management costs shown in Table B-2 do not adequately reflect the actual acres that are to be treated in the initial part of the decade. In particular, the increased planting acreage shown by BLM will not be necessary until sometime after 1987 when the increased harvested areas actually are ready for planting.

We have made a revised estimate of sales volume and projected revenues and costs in Exhibit 1. In our opinion these are more realistic estimates of the sales volumes and values to be expected during the next 3 years. Exhibit 1 also includes an estimate of actual harvest levels for 1982-84 and two levels of estimated harvest values per MBF for 1984-86. Based on these estimates it is our opinion there is a possibility that 25 percent of the receipts from timber harvest would not be sufficient to fund the estimated forest management costs shown in the BLM Table B-2.

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As a result we recommend that the BLM more closely evaluate potential income flows against estimated costs. Final plans should provide for such a contingency in order to insure a continued high level of annual timber harvest.

Economic Efficiency of Alternatives

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Forest management costs should be carefully examined in relation to the benefits in terms of harvest volumes produced. The BLM planning does not clearly present this relationship for each alternative. We have displayed the first decade costs for forest management for three of BLM's alternatives in our Exhibit 2. The bottom line reveals that the management costs per MBF produced by Alternatives 2 and 4 are 6 percent less than those of Alternative 5. Alternative 2 has the lowest per MBF cost and by that criteria would be the best. Exhibit 2 also shows that the major expenditures in Alternatives 2, 4 and 5 (other alternatives are similar) are for planting, replanting and sale preparation and administration. These are basic activities and do not include the intensive management costs of precommercial thinning, genetics, fertilization, etc. In Alternatives 2 and 4, ninety percent of the total management expenditures occur in these basic activities. In contrast, 97 percent of the total management expenditures in Alternative 5 (the present situation) are related to planting, replanting and timber sale preparation and administration. The intensive forest practices proposed in either Alternative 2 or 4 make up the balance of the total costs, or about 10 percent.

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action because of the critical and highly productive responses to intensive management in terms of increased harvest. Our analysis results in Exhibit 3 shows the impact of intensive practices. Without these the benefit/cost ratio for the first decade in Alternative 2 is reduced from 8.5 to 1 down to 6.3 to 1. A similar reduction could be expected without the intensive practices in BLM's preferred Alternative 4.

The great importance of the intensive management funding is further illustrated in Exhibit 4. The annual harvest of Alternative 2 is increased by 89 million board feet because of intensive management. The benefit/cost ratio of the first decade intensive management program is 26.3 to 1.

The impacts of the intensive management program on the harvest level (often called the allowable cut effect) was estimated because time did not permit use of BLM's SIMIX model. We considered only the first decade harvest impacts as shown in Exhibit 4. The total first decade harvest increase due to an intensive management program was allocated to the several practices in proportion to the effects of those practices on per acre yields in a fully regulated forest over a rotation.

The genetic planting program produces the largest impact during the first decade. An additional 28.4 million board feet in first decade annual harvest can be attributed to planting 1,520 acres with genetically improved stock. The combined pre-commercial and commercial thinnings provide the next best investment opportunity.

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This is a small percent of the total management expenditures required. Yet, these expenditures will generate a very substantial increase in the allowable harvest rate.

Economic Efficiency of Intensive Practices

Total costs and total revenues cannot be used alone to compare the relative efficiency of alternative plans nor of forestry practices within plans. We have examined relative efficiency using benefit/cost ratios for only the first decade and have isolated intensive management effects on the ratios. In a comparison of Alternative 2 and the BLM preferred Alternative 4, we found that Alternative 2 had the highest benefit to cost ratio. (See Exhibit 3.) Alternative 2 provides about \$526 million in discounted first decade revenue against discounted costs of \$61 million, or a ratio of 8.5 to 1. The BLM's preferred alternative would produce about \$490 million in discounted first decade revenue, discounted costs of \$58 million and a ratio of 8.4 to 1.

In order to measure the effects of intensive management we examined Alternative 2 under the assumption that funds might not be available in the first decade to implement the planned intensive forest management practices. These practices included genetic planting, precommercial and commercial thinning and fertilization. These practices require only about 10 percent of the expected first decade costs in Alternative 2. But reduced stumpage revenue early in the decade is a possibility as noted earlier. If this should happen, a likely candidate for cost savings would be the intensive practices. However, we would not recommend such

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The selection of a plan alternative should consider the effects of possible short falls in funding of the planned management practices. We have estimated that a reduction of only about \$3 million in intensive funding after such a plan were implemented would reduce the harvest under the preferred alternative to below the current harvest level of 201 million B.F. However, under Alternative 2 such a reduction in funding would reduce the harvest to about 224 million board feet or about the recent past level. We conclude from this that Alternative 2 is a much better alternative for implementation because it contains a land base that is large enough to provide better assurance of future timber supplies. To illustrate this we calculated the extra land area (under natural growth) that would be needed to replace the allowable harvest lost due to lack of funds for the intensive management program. (See bottom of Exhibit 4.) We estimate that over 176,000 acres of unmanaged forest land would be needed to replace the 89 million board feet harvest volume attributable to intensive management.

Cost Efficiencies for Individual Intensive Practices

Reforestation and replanting costs on the Roseburg District are a substantial part of the forest management budget as we have noted above. Our examination reveals that these are also high on a per acre basis. Therefore, in terms of improving efficiency, this cost bears closer examination as a possible target for cost reduction efforts. We have reviewed planting costs for other agencies and industry and show the results in Exhibit 6. As a

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result we have a concern over the relatively high reforestation cost reported in the DEIS for the Roseburg District. For the two local national forests, the State of Oregon and forest industry, planting costs are significantly lower than the Roseburg District. The costs reported for chemical release, precommercial thinning and fertilization on the Roseburg District seem to be more in line with those of the other land managers. It should be noted that reforestation expenditures are made in the first few years of a rotation and therefore significantly affect the soil expectation values (SEV) shown in the DEIS. We will have more to say about this later.

Our concern here is with the need for an effort to reduce BLM regeneration costs. It is our recommendation that BLM should include in their plan provision for specific regeneration cost reduction efforts during the plan decade. Such reductions would better assure that management funding from 25 percent of receipts would be adequate in the future.

Effects and Costs of Extended Rotations

The extended rotations used to provide for other resource values have a substantial impact on the allowable harvest of the District. We believe that BLM has not properly informed the DEIS public reviewers of the highly significant impact of reserving areas for management under extended rotations of 250 years without intensive management. Our calculations indicate that this management will use five times as much area to produce a given volume of annual harvest as the area needed under intensive management.

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agree that detailed economic analysis is needed to help determine the most efficient timber producing regime. However, we are concerned about the methods used and the implications of the SEV calculations.

First of all, we have not observed the use of economic efficiency as a guide to planning by the BLM in past years. In fact, many of its management policies such as even flow of harvest volume and the goal of regeneration within a 5 year period fail to measure up under any economic efficiency criteria. Also we note that the most efficient combination of management techniques shown in the DEIS are under a 65 year rotation for a managed stand, yet this was not selected.

It seems obvious to us that SEV's were not used by BLM in developing the most efficient management prescription. While we believe these should have been used as guides, we are concerned that the BLM calculations over state costs and are not entirely reliable. Also, the presentation of many negative values is misleading.

A major factor in determining the level of the BLM values is the high regeneration costs in the first years of a rotation. This causes most of the low or negative indicated values. In western Oregon millions of acres are being managed on a sustained yield basis which implies that other land owners/managers are more cost efficient, or have different outlooks for future revenues, or require less return on forestry investments.

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In Exhibit 7 we have shown the relationship between lands needed to produce one million board feet of allowable annual harvest under intensive management versus the extended rotation of 250 years. The capitalized annual costs of management only (without capital cost of the land and growing stock needed) are \$633,900 for the 1,018 acres of intensively managed lands and \$450,700 for the 5,020 acres of extended rotation lands. This indicates that the management cost of producing one million board feet under an extended rotation is lowest. However, one must evaluate the cost of the necessary extra area of 4,002 acres and the regulated growing stock on that area. The average acre under a regulated condition with a 250 year rotation would contain a stand 125 years of age. In our opinion such lands would have a cost value, if obtained in the Roseburg area, of at least \$5,000 per acre. Thus, we see that an extra capital cost of \$20,000,000 for the extra 4,002 acres would be required in addition to the capitalized management cost of \$450,700 in order to produce one million board feet annually. This illustrates the exorbitant cost of timber output from extended rotations. All possible effort should be made by BLM to use other means or much shorter extended rotations to provide the other resource values.

Significance and Reliability of Soil Expectation Values in Choosing an Alternative

The soil expectation values (SEV) contained in the DEIS are the result of a new analysis on the part of the BLM. We

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Our examination indicates the treatment of administrative costs by BLM in their SEV calculations was incorrect. Apparently, these have been handled this way because of the accounting or budgetary procedures used within the agency. These tend to be the same regardless of the alternative and thus they could have been excluded since the SEV's were only for comparative purposes.

We are also concerned that a portion of the administrative costs are such items as planning or wildlife management. These produce other multiple resource values which are generally not to be included in the SEV calculations used to evaluate timber production efficiency.

The SEV calculations should use a discount rate that reflects real rate of return appropriate for the federal government. The U. S. Forest Service recently conducted a detailed study about appropriate discount rates and came to the conclusion that 4 percent was an acceptable real rate of return for government use in planning. We concur.

We believe that the BLM assumptions about future price increases for forest products are realistic. The BLM may have used an initial price level that was too high. However, a lower initial price per MBF would not likely change the SEV's calculated because the revenues are in the distant future.

Regarding SEV's our recommendation would be that the BLM reexamine their purpose and usefulness in preparing the plan and to limit their presentation in the EIS to only a few critical values as they relate to the final selection of management regimes.

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Mr. Robert E. Ragon
August 20, 1982
Page 14

These values should be determined with a 4 percent discount rate which gives greater weight to more distant values and costs, thus reflecting government's concern for future generations.

We would be pleased to discuss any of our findings or recommendations with you or members of the Roseburg District staff in detail.

Sincerely,

Carl A. Newport

Carl A. Newport

David R. Cox

David R. Cox

CAN:DRC:jlf
Attachments

EXHIBIT 1

ESTIMATED SALES, HARVEST RATES AND PROJECTED REVENUES

ON ROSEBURG DISTRICT, BLM

IN FY 1984, 1985 AND 1986

FY Year	Estimated Sales MBF	Average Sales Value \$/MBF	Harvest Level MBF	Average Harvest Value \$/MBF	O & C 25% Funding From Estimated Harvest million \$
1981	182,900	\$259.81	150,800	\$322	12.1
1982 (est.)	185,000	150.00	--	--	--
1983 (est.)	200,000	180.00	--	--	--
1984 (est.)	246,000	216.00	--	--	--

Optimistic Value Level

1984	--	--	185,000	260	12.025
1985	--	--	190,000	150	7.125
1986	--	--	200,000	180	9.000

Pessimistic Value Level

1984	--	--	185,000	200	9.250
1985	--	--	190,000	130	6.175
1986	--	--	200,000	150	7.500

MASON BRUCE & GIRARD, INC.

EXHIBIT 2

COMPARISON OF FIRST DECADE

ESTIMATED FOREST MANAGEMENT COSTS

FOR ALTERNATIVES 2, 4 & 5

ROSEBURG DISTRICT - BLM

	Alternative		
	2	4	5
Total Decade Costs ^{1/}	\$75,218,600	\$70,543,400	\$60,480,200
Total Planting and Replanting Costs	33,820,800	31,640,600	23,883,800
Planting and Replanting Cost as a Percent of Total Costs	45%	45%	39%
Sale Preparation and Admin.	33,689,400	31,477,300	35,299,200
Sale Preparation and Admin. as a Percent of Total Costs	45%	45%	58%
Total Cost per Thousand Board Feet Produced	\$28.17	\$28.33	\$30.10

EXHIBIT 3

NET PRESENT VALUE OF FUTURE REVENUES AND COSTS^{1/}

FOR PLAN ALTERNATIVES 2, 4 AND 2(WITHOUT INTENSIVE MANAGEMENT)

DURING THE FIRST DECADE OF EACH PLAN

Alternative	Present Value 1st Decade Revenues M\$	Present Value 1st Decade Costs M\$	Benefit/Cost Ratio
4 (BLM preferred)	\$491,185	\$57,981	8.4:1
2	526,101	61,824	8.5:1
2 w/o intensive mgmt.	350,576	55,162	6.3:1

^{1/} Revenue and costs discounted at 4 percent from the midpoint of the decade. Costs (those shown in DEIS on page 121) were increased at 0.42% and revenues at 1.65% real rates to the midpoint of the decade.

^{1/} Includes costs shown in BLM, Roseburg DEIS on page 121. Costs are not discounted.

EXHIBIT 4

ESTIMATION OF THE ANNUAL REVENUES AND
COSTS ON ALTERNATIVE 2
ROSEBURG DISTRICT - BLM

Estimated Increase in Annual Harvest During First Decade due to Intensive Management in Alternative 2	89,280 MBF																									
Present Value of Increased Annual Harvest During First Decade due to Intensive Management	\$175,525,000																									
Present Value of the Annual Costs of Intensive Management Practices During First Decade	\$6,662,000																									
Value/Cost Ratio of Intensive Management	26.3:1																									
Estimated Allowable Cut Effect During First Decade For:																										
<table><tr><th><u>Intensive Practice</u></th><th><u>Extra Annual Harvest</u></th><th><u>Acres to be Treated During Decade</u></th><th><u>Extra Annual Harvest per Acre Treated</u></th><th><u>Cost per Acre Treated</u></th></tr><tr><td>Genetic Planting</td><td>28.1 MMBF</td><td>1,520</td><td>18.490 MBF</td><td>10</td></tr><tr><td>Fertilization</td><td>19.6 MMBF</td><td>57,984</td><td>0.338 MBF</td><td>72</td></tr><tr><td>PCT & CT</td><td>37.5 MMBF</td><td>42,240</td><td>0.888 MBF</td><td>90</td></tr><tr><td></td><td>85,140 MBF</td><td></td><td></td><td></td></tr></table>	<u>Intensive Practice</u>	<u>Extra Annual Harvest</u>	<u>Acres to be Treated During Decade</u>	<u>Extra Annual Harvest per Acre Treated</u>	<u>Cost per Acre Treated</u>	Genetic Planting	28.1 MMBF	1,520	18.490 MBF	10	Fertilization	19.6 MMBF	57,984	0.338 MBF	72	PCT & CT	37.5 MMBF	42,240	0.888 MBF	90		85,140 MBF				
<u>Intensive Practice</u>	<u>Extra Annual Harvest</u>	<u>Acres to be Treated During Decade</u>	<u>Extra Annual Harvest per Acre Treated</u>	<u>Cost per Acre Treated</u>																						
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PCT & CT	37.5 MMBF	42,240	0.888 MBF	90																						
	85,140 MBF																									

Additional Acres of Naturally Grown Forest Land Needed to Replace and Sustain the Same Amount of Annual Harvest (85,140 MBF) as is Obtained by Intensive Management 176,400 acres

EXHIBIT 5

COMPARISON OF AREA AND COSTS
NEEDED TO PRODUCE ONE MILLION BOARD FEET
ANNUAL HARVEST UNDER INTENSIVE AND EXTENDED ROTATIONS
ROSEBURG DISTRICT - BLM

	Intensive Management Regime	Extended Rotation Regime
Acres Needed to Provide One Million Board Feet (B.F.) of Sustained Yield Harvest	1,018 ac.	5,020 ac.
Acres Harvested Each Year to Provide One Million B.F.	12.89 ac.	20.08 ac.
Total Capitalized Cost of Management Expenditures to Produce One Million B.F. Indefinitely (4% Rate)	\$633,900	\$450,700
Additional Acres Needed to Produce One Million Board Feet Under Extended Rotation		4,002 ac.
Estimated Cost of Additional Land and Growing Stock Needed Under Extended Rotation at \$5,000 per acre.		\$20,000,000

EXHIBIT 6

COMPARISON OF FOREST MANAGEMENT COSTS
AMONG DIFFERENT OWNERSHIPS IN WESTERN OREGON
(dollars per acre treated)

Cost Item	Roseburg District BLM	Rogue River National Forest	Umpqua National Forest	State of Oregon	Southern Oregon Forest Industry
Reforestation & Replant	659	364 ^{2/}	328 ^{2/}	230 ^{4/}	165
Release	16				38
Precommercial Thinning	65	159 ^{3/}	135 ^{3/}	105	86
Fertilization	72			40	46

1/ Forest industry estimates obtained from the Industrial Forestry Association.
2/ Represent 1979 data from Tree Farms in Southern Oregon.
3/ Includes replanting, fertilization.
4/ Includes release and represents statewide data.

Response to comments in Letter 68.

68-1 See response to comment 4-1.

68-2 The 70,000 acres of old growth remaining under Alternative 7 after ten decades of management is the result, for the most part, of a large acreage withdrawal because of reforestation problems. The lands would occur as small tracts not properly distributed to provide habitat for the identified spotted owls.

On the other hand, contained within the 68,100 acres of old growth remaining under Alternative 6 are acres specifically earmarked and arranged around the identified owls so as to meet their habitat needs.

68-3 See response to comment 11-8.

68-4 The Oregon Endangered Species Task force management recommendations and the proposed revision of the Oregon Interagency Spotted Owl Management Plan provided a basis for EIS analysis, not a specific proposal for implementation.

68-5 The DEIS was in error. The text has been revised in the FEIS, Chapter 3, Vegetation Conclusions section.

- 68-6 The Glossary definition has been corrected.
- 68-7 The methodology utilized to determine elk population response to varying habitat conditions in the Tye area provided for the classification of forest stands in excess of 120 years of age as survival cover. Additionally, stands 45-120 years of age were assumed to provide summer and winter thermal cover needs. Refer to DEIS, Chapter 2, Affected Environment, page 45.
- 68-8 Forest stands 50-120 years of age meet thermal cover needs. Stands 120 years of age and older supply both the food resources and thermal qualities viewed as important for survival during severe winter weather periods. The age class spread represents a range of quality in relation to cover, with the older stand providing better quality survival cover and being capable of better serving the overall needs of the animals.
- 68-9 As stated in the EIS, Chapter 3, Table 3-11, the elk populations are predicted to decline 20 percent below present levels after five decades in response to the changes in habitat (cover-forage) brought about by intensive forest management practices on the habitat they occupy. Elk would continue to exist. Simply stated, the habitat quality which exists today is thought to be capable of supporting a larger population of elk than that which will be a product of five more decades of intensive forest management.
- 68-10 The 18 pairs of spotted owls projected to remain in Alternatives 3 and 4 represent a 67 percent decline from existing conditions. This decline in owl pairs comes as a result of reducing the old growth base by approximately 70 percent. In light of this relationship, it can be stated that the owl is indeed a good indicator of changes in the old growth habitat.
- 68-11 The text has been revised in the FEIS, Chapter 3, Impacts on Animals, Transportation System in Terrestrial Vertebrates section.
- 68-12 The text has been revised in the FEIS, Chapter 3, Impacts on Animals, Other Timber Management Treatments section, deleting elk from the statement on slash burning.
- 68-13 Western Oregon biologists have noted slash from pre-commercial thinning lasting 1-2 decades. Approximately 30,000-40,000 acres would be treated in the first decade, representing about 10 percent of the SYU acreage and a significant loss of habitat.
- 68-14 It may be that shelterwood and seed tree harvest provide adequate forage; however, commercial thinning as practiced in the Roseburg District creates neither prime forage nor cover. Compared with old growth habitat interspersed with clearcuts, quality of thinned areas as elk habitat is considerably less.
- 68-15 The text has been revised in the FEIS, Chapter 3, Impacts on Animals, Fish Conclusions section. Temperature has been removed from the discussion. See response to comment 16-18 for discussion on sediment.
- 68-16 The text has been revised in the FEIS, Chapter 3, Impacts on Animals, Terrestrial Vertebrates, Timber Harvest section.
- 68-17 See text revision, FEIS, Appendix B, Table B-2.
- 68-18 See response to common issue 5.
- 68-19 As noted on page 114 of the DEIS, an analysis of the economic efficiency of the forest management practices in the Original Proposed Action was requested by members of the public during the EIS scoping process. Soil expectation value was the method of evaluation requested. Soil expectation value is not a variable listed in either the original district planning criteria (Appendix C) or the O&C Forest Resources Policy (Appendix A) to be used in developing plans for BLM administered forest lands in western Oregon.
- 68-20 Table B-2 has been revised to increase the number of baselines for forecasting revenue; however, note that the numbers reported in Tables B-1 and B-2 of the DEIS are decadal averages spread evenly across the period for the purpose of obtaining a discounted benefit-cost ratio of the timber management program in the proposed action. No attempt was made to speculate on cyclical ups or downs. The 1984 to 1986 harvest level reported could be a significant understatement of actual harvest if the economy is in an upturn and the more than 616 MM bbl. ft. on the district now sold but uncut were also being harvested. In the case of increased actual harvest, the number of acres being planted would also be greater than that planned for in Table 1-2 of the DEIS. Also, see response to comment 15-2.
- 68-21 Neither the district's planning criteria (Appendix C) nor the O&C Forest Resources Policy (Appendix A) suggest that a choice among alternatives will be based on economic efficiency. However, economic feasibility was a factor in the selection of intensive management practices for all alternatives.
- 68-22 See response to common issue 2.
- 68-23 See response to common issue 4.
- 68-24 See response to comment 68-19.
- 68-25 Table B-1 includes interdisciplinary support and review as a cost of the district forest management program. The costs of interdisciplinary support and review are not included in Table B-6 of the DEIS. The baseline yields, costs and revenues of Table B-6 in the DEIS are the determinates of the analysis of soil expectation value.

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August 19, 1982

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Mr. James Hart, Dist. Mgr.
Bureau of Land Management
777 NW Carden Valley Blvd.
Roseburg, OR 97470

Dear Jim,

On behalf of the Association of O&C Counties, the following response to the Roseburg District Bureau of Land Management Timber Management Draft Environmental Statement is here-with submitted.

In the past, responses to BLM Draft Statements were intended and limited to their scope and adequacy. Advocacy of a particular plan was the subject of the response to the Final EIS. We understand that the process has now been changed where-by the FEIS will, in effect, become a Tentative Decision Document. Thus this response will not only critique the DEIS but it will also set forth our druthers.

The DEIS appears to be adequate in scope and is sufficient in detail on most, but not all, issues. Our concerns are listed and discussed in the following paragraphs.

COMPARATIVE COSTS

Nowhere in the DEIS is there a table showing the budgetary requirements of each Alternative. The lack of such data leaves the responder and the decision maker in the dark. Each Alternative is developed on the premise that there will be full funding. Past and present trends of Congress indicate that unlimited funds will probably not be available. Thus after a plan is selected and implemented, the annual timber sale will still have to be tailored to fit the available funds.

We remind that the days of easy money due to the use of a generous 25% plow-back fund appear to be over. 25% of projected receipts during the next decade will not be sufficient to meet the needs of Alt. 5 (the Existing), much less monies needed to carry out the higher level of intensive management called for in Alt. 4, (the Proposed Action).

We are not faulting the District for proposing a higher level of intensive management, we commend you. But the reality of full funding is doubtful, accordingly, the chosen plan must be responsive and flexible to the mode of each year's Congressional monetary priority. Because of their higher timberland base, Alternatives 1 and 2 will be more adaptable to funding deficiencies than the other Alternatives, including the Proposed Action.

Mr. James Hart

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August 19, 1982

MANAGEMENT CRITERIA AND CRITERIA APPLICATION - July 11, 1982

This Association put forth considerable effort and resources in responding to the Coos-Curry EIS. You have previously been provided with a copy of that report. We are please to note that the Association's views as set forth in that document mesh well with the new criteria adopted by the National Director. If interpreted and followed as we expect it to be, a high level of output can be expected without undue environmental degradation.

SUMMARY

(1) The highest possible level of timber production should be the goal consistent with applicable laws and regulations. (2) Amenities not required by law should be carefully blended within the timberland base in a manner that does not unduly interfere with timber production. (3) Budget requirements of each Alternative must be known before a decision can be made. (4) All intensive management practices with a positive B/C should be included regardless of which Alternative is selected.

CONCLUSION

In consideration of the above and the information within the DEIS, we believe that the output level of timber can be higher than that of the Proposed Action. Without the benefit of computer data and professional assistance, Alternative 2, combined with the adjustments required by the new criteria, appears to be our preference. We also note that Alt. 2 reaches the regulated position in less time and that the period where some 50 year old stands will be harvested is shorter by one decade.

Finally, we commend you and your able staff for a job well done. The DEIS reflects sincerity, devotion and inventiveness. We know that you will take our comments in the constructive light that is intended.

Respectfully submitted,

Ray E. Doerner
Ray E. Doerner, Exec. Dir.

Mr. James Hart

- 2 -

August 19, 1982

We trust that the Final EIS will contain the projected costs of each alternative.

DEPARTURE FROM NON-DECLINING EVEN-FLOW

The DEIS leads one to believe that any departure that takes the allowable harvest below the Long Run Sustained Yield for any period of time is illegal. This is not so - it is simply Bureau policy. Historically the private timber lands of Douglas County have provided the lion's share of raw wood for local manufacturing. Only in very recent decades have the Federal timberlands made any sizable contribution to the needed supply. The result of this imbalance is that private stands of harvestable timber are in short supply and their new stands of regrowth are a few decades from maturity.

Table C-1 shows that over one half of the BLM acreage in the District is above rotation age. This over-abundance of mature timber compared to a short supply of growing stock is almost the exact opposite of the situation existing on the county's industrial private forest lands. Private growers are short on mature timber and long on reprod. It appears that each (private and federal) have what the other needs for a balanced age-class distribution. If not now, surely this possibility of departure should be explored prior to the next decadal planning exercise.

CONSISTENCY WITH THE O&C ACT AND OTHER LAND USE PLANS

The O&C Act specifically stresses the stability of local communities as a major purpose. The Federal Land Policy and Management Act states that the land use plans of the Secretary "shall be consistent with State and local plans to the maximum extent that he finds consistent with Federal law and the purposes of the Act".

The DEIS indicates that the Proposed Action is not consistent with the Forestry Plan for Oregon and we submit that the larger acreages of land set aside for unprotected wildlife species is not in compliance with FLPMA or the O&C Act.

FERTILIZATION

We note that the PA provides for about 56,000 acres of thinned stands to be fertilized. This is a commendable start. However, we believe that among the 100,000+ acres of stands under the 30 year class shown on Table C-1, there is also an opportunity for a fertilizer program on some unthinned stands. We recommend that these acres be surveyed to determine if such a possibility exists. If the survey finds, as we expect, that some unthinned stands can be benefited, the plan should allow for it's immediate implementation. Lost production is lost forever.

VISUAL MANAGEMENT

Because of the mixed ownership pattern, it is doubtful that any BLM visual control will be of any meaningful value. We believe that that the BLM's visual management program should be restricted to only those areas so designated as scenic routes by the Federal, State or Local governments.

In addition where the BLM's ownership is inter-mixed with unrestricted private lands, we submit that the 250 ym minimum harvest age is much too high. In our detailed analysis of the Coos District plan, we concluded that a 120 MHA was sufficient. Under the Area Control Harvest concept as proposed, only 1.2% of the land area would be disturbed annually or 12% during the decade.

Response to comments in Letter 69.

69-1 Neither the district's planning criteria (Appendix C) nor the O&C Forest Resources Policy (Appendix A) suggest that choice among alternatives will be based on funding requirements. Common Issue 2 projects the district's timber sale offerings if funding were insufficient to meet the district's commitments to intensive management in Alternative 9, the Preferred Alternative.

69-2 Generally, fertilizing unthinned stands more than 10 years prior to a commercial thinning entry or final harvest does not yield an economic return. Fertilization plans in the Preferred Alternative (Alt. 9) include unthinned stands which exhibit spacing characteristics of thinned stands.

69-3 The Preferred Alternative includes special visual considerations for BLM recreation areas and State of Oregon designated scenic areas. Refer to DEIS, Chapter 3, page 82. Also, see response to comments 58-2 and 58-3.



WESTERN FOREST INDUSTRIES ASSOCIATION

1500 S. W. TAYLOR STREET • PORTLAND, OREGON 97205
TELEPHONE
503-224-5455

August 18, 1982

Mr. James E. Hart, District Manager
Roseburg District Office
Bureau of Land Management
777 N.W. Garden Valley Blvd.
Roseburg, Oregon 97470

Re: Roseburg Timber Management Draft Environmental Impact Statement

Dear Mr. Hart:

Western Forest Industries Association (WFIA) appreciates the opportunity to comment on the Draft Environmental Impact Statement for the Roseburg District Timber Management Plan and your proposed action. Our Association is comprised of approximately 100 manufacturers of lumber and plywood with mills located throughout several western states. These firms are primarily small, independently-owned businesses that share a mutual dependence on timber produced on public forest lands for a source of raw material. Several of our members are major purchasers of BLM timber in western Oregon, including the Roseburg District. Consequently, we have been deeply involved in reviewing the timber management proposals being prepared by several BLM districts. The future viability of our members, and the stability of the communities that are dependent on their operations, will be determined by the long-term productivity of public forest lands.

In quite simple terms, we believe the future availability of timber from public lands will be determined by the amount of commercial forest

Mr. James E. Hart
August 18, 1982
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land preserved for timber production purposes. Our goal in participating in your planning process is to maintain or expand the intensive timber production base. This goal is shared by the Oregon State Department of Forestry in its objectives for the Forestry Program for Oregon and by the House of Representatives of the Oregon State Legislature (see House Memorial #1, enclosed). Unfortunately, all of the BLM proposals made to date are inconsistent with this goal. Your proposal is no exception. While timber production will increase by 48 million board feet per year under your proposed action, the increase in yield will occur on nearly 44,000 fewer acres. In order to implement the alternative, significant increases in intensive forest management investments will be required.

As an Association of forest industry concerns, WFIA applauds your leadership in promoting the latest scientific advancements in forestry. However, we do not support, and in fact oppose, the use of intensive management investments as a vehicle to trade away productive forest land for unsubstantiated non-timber uses. Paramount among our many concerns is the outlook for revenue to finance the intensive management program you have proposed. Your cash flow scenario assumes future stumpage prices in excess of \$300/MBF and that timber currently under contract will be harvested. In light of the less than certain future for funding intensive management, it would seem prudent to analyze some alternative means of achieving the same timber production objectives suggested in the proposed action. We believe the most viable option is to increase the amount of land allocated to intensive timber production. Such an alternative would most likely result in a more cost efficient method of achieving your timber harvest goal. The major deficiencies of the Draft Environmental Impact Statement that lead us to this conclusion are:

1. No analysis of the opportunity costs of removing productive forest land from the intensive timber production base.

Mr. James E. Hart
August 18, 1982
Page Three

2. Faulty analysis of expected revenues.
3. Inadequate cost data for implementing each of the alternatives.
4. Erroneous cost efficiency analysis.

Each of these concerns will be addressed individually.

OPPORTUNITY COSTS

The proposed action includes several classifications of lands placed in the Constrained Timber Production Base. Habitat for spotted owls, old growth blocks of various sizes, osprey and heron habitat, riparian zones and visual management areas totaling 52,047 acres will be placed in the constrained base and managed under area control. It is imperative that the opportunity foregone in terms of timber production, income to the Federal Treasury and the counties, and the benefits to dependent communities be assessed for each of these resource allocations. The tradeoffs involved in removing productive land for each of these non-timber uses can be best assessed by disclosing the opportunities foregone in this manner. The public will be in a better position to understand the relative costs and benefits of these resource allocations.

REVENUES

Table B-2 on page 116 of the Draft EIS displays an erroneous representation of expected revenues. For example, revenues expected in 1984 are calculated by multiplying the price of stumpage (\$302/MBF) by the proposed action harvest level of 249 million board feet. There are two major flaws in this prediction. First, timber sales harvested in 1984 will be those sold in 1981 and have very different stumpage values than those displayed in Table B-2. Second, the volume harvested in 1984 will

Mr. James E. Hart
August 18, 1982
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more nearly reflect the sale program in effect in 1981, i.e. 201 million board feet. Likewise, volume harvested in 1985 will be from sales sold in 1982, etc. Therefore, the expected revenues displayed in Table B-2 are overstated for 1984, 1985 and 1986. Furthermore, the stumpage rates forecasted for the planning period may well be optimistic. Some documentation should be provided in the EIS.

COST DATA BY ALTERNATIVE

In order to perform an acceptable economic analysis of each alternative, the cost of implementing each alternative is necessary. Table B-1 displays the forest management costs for the proposed action but does not include total costs or itemized district and State overhead costs. These cost figures should be displayed for each alternative, along with expected revenues for each alternative, and discounted back to present net value. Data displayed in this manner will facilitate a more accurate assessment of the relative efficiency of each alternative.

SOIL EXPECTATION VALUES

Your use of soil expectation values in assessing the economic efficiency of management regimes is extremely misleading. Bare land economics may be useful in determining the relative efficiency of alternatives, but the negative values displayed in Tables B-3 through B-4 imply that the management practices are not cost effective. Why you chose this method of analyzing management opportunities is not clear. The fact is, the Roseburg District has a large volume of standing inventory that is extremely valuable. We believe it is inappropriate to ignore this value in calculating the costs of producing the next rotation. Specifically, reforestation costs should be viewed as a cost against harvesting the existing stand, not in establishing a future stand. Existing laws and regulations require that reforestation be assured prior to making a decision

Mr. James E. Hart
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Page Five

to harvest timber. Therefore, it is appropriate to charge reforestation and associated costs against the existing stand rather than the future stand. The existing stand could not be cut without a commitment to reforestation. An analysis of the management regimes utilizing this more traditional approach will result in a more accurate assessment of the cost efficiency of those practices.

The Final Environmental Impact Statement should include information to satisfy the shortcomings described above. We believe the additional analysis will demonstrate that the proposed action is a very risky alternative relative to funding, will result in tremendous opportunity costs in terms of intensive timber base reductions, and may well be less cost efficient than some alternative land base/intensive management mix.

RECOMMENDATIONS

We ask that an alternative with a land use allocation similar to Alternative #2 be given consideration as the proposed action. Such an alternative would strike a compromise between current land uses and those suggested in the current proposed action. Of greatest significance, an intensive timber production base of approximately 300,000 acres would not be as sensitive to budget short-falls as the current proposal. In case of funding shortages, subsequent reductions in timber harvest would not be nearly as significant. In addition, the benefit/cost relationship would be more favorable since it would require a smaller investment in intensive management to yield the same, if not higher, harvest level.

Our recommended alternative would also be consistent with the Director's July 15, 1982, Criteria for Application of O & C Forest Policy. The current proposed action is not. Specifically, compliance with Criteria #5 would be better accommodated by Alternative #2 in regard to

Mr. James E. Hart
August 18, 1982
Page Six

the allocation of commercial forest land for non-timber uses. The alternative would also maintain future options for preserving old growth timber stands. At the end of the planning period, over 70,000 acres of old growth timber would remain on the district. Even after 100 years, 21,100 acres of old growth would remain; more than enough to sustain a viable population of spotted owls.

When all the major criteria are considered; the dependency of local communities on the timber resource, the goals of the State Department of Forestry, House Memorial #1, the Director's Criteria for Application of O & C Forest Policy, the tremendous cost of the proposed action, the uncertain outlook for funding intensive management practices, the cost/benefit relationship of the proposed program, and the over abundance of old growth timber, Alternative #2 is the most prudent and logical choice for final adoption.

Very truly yours,

WESTERN FOREST INDUSTRIES ASSOCIATION

Jim Geisinger
Jim Geisinger

Enclosure

cc: Mr. William Leavell
Mr. Robert Burford

OREGON LEGISLATIVE ASSEMBLY 1981 Regular Session

House Memorial 1

Sponsored by COMMITTEE ON AGRICULTURE AND NATURAL RESOURCES (at the request of Representative Bill Grannell)

SUMMARY

The following summary is not prepared by the sponsors of the measure and is not a part of the body thereof subject to consideration by the Legislative Assembly. It is an editor's brief statement of the essential features of the measure as introduced.

Urges United States Bureau of Land Management to sustain timber production in western Oregon.

HOUSE MEMORIAL 1

To the Honorable Senate and House of Representatives of the United States of America, in Congress assembled:

We, your memorialists, the House of Representatives of the State of Oregon, in legislative session assembled, most respectfully request the Congress of the United States to intervene in the Bureau of Land Management land use planning in Oregon and specifically in the Coos Bay district because:

Whereas timber management proposals are being developed in the Coos Bay district and in plans under preparation in all Bureau of Land Management's districts in western Oregon; and

Whereas the timber management plan proposed by the Bureau of Land Management's Coos Bay district would reduce the sustained yield timber production level by 16 million board feet, eliminate over 200 jobs in the local area and reduce county timber revenues by 2.3 million dollars; and

Whereas the principal cause for the proposed reduction is the Bureau of Land Management's decision to reduce the intensive timber production base by nearly 60,000 acres for the exclusive benefit of wildlife and visual aesthetics; and

Whereas alternatives have been developed by the Bureau of Land Management that would allow an increase in sustained yield timber production and creation of new jobs in one of the most depressed areas of our state; and

Whereas the revesting Act of Oregon and California Railroad and Coos Bay Wagon Road Grant Lands (43 USC 1181a) that governs management of most Bureau of Land Management lands in western Oregon specifies that timber production should be the dominant use of these lands and be managed for the economic welfare of dependent communities; and

Whereas the Oregon economy is dependent on the growing, harvesting and processing of renewable timber resources; and

Whereas other Bureau of Land Management districts in western Oregon are following the precedent set by the Coos Bay district by proposing reductions in the timber production land base for nontimber uses at the expense of timber supply, employment and economic stability of dependent communities; now, therefore,

Be It Resolved by the House of Representatives of the State of Oregon:

NOTE: Matter in bold face in an amended section is new; matter *italicized and bracketed* is existing law to be omitted; complete new sections begin with SECTION.

HIM 1

[2]

- 1 (1) We urge the Congress of the United States to request that the Bureau of Land Management give highest
- 2 priority to the following goals in making final decisions on the Coos Bay district and other western districts:
- 3 Recemphasize the importance of community stability, economics, payroll and tax base within Oregon and its
- 4 individual planning districts; and make certain every possible effort is made to preserve the intensive
- 5 management land base for timber production purposes.
- 6 (2) A copy of this memorial shall be transmitted to each member of the Oregon Congressional Delegation;
- 7 to the Director of the Bureau of Land Management; and to each of its Oregon district offices for inclusion in
- 8 the hearings on each district land use plan.

Response to comments in Letter 71.

71-1 See response to common issue 2.

71-2 See response to common issue 4.

71-3 See response to comment 68-20.

71-4 Table B-1 in the FEIS includes cost data for Alternatives 4 and 9.

Also, see response to comment 68-21.

71-5 See response to comment 68-19.



United States Department of the Interior

FISH AND WILDLIFE SERVICE
Division of Ecological Services
Portland Field Office
727 N.E. 24th Avenue
Portland, Oregon 97232

Reference: ES

August 20, 1982

MEMORANDUM

To: Roseburg District Manager, Bureau of Land Management
Roseburg, Oregon

From: Field Supervisor, Division of Ecological Services
Portland, Oregon

Subject: Review of the Roseburg Timber Management Draft Environment Impact Statement, Douglas County, Oregon

We have reviewed the subject draft environmental statement on the Roseburg Timber Management proposal and provide the following comments:

General Comments

Based on the information submitted, the proposed management plan could have a significant adverse impact on area fish and wildlife resources. The document does not discuss impacts associated with the preferred alternative in conjunction with anadromous and resident fish. In addition, measures concerning the displacement of wildlife through habitat reduction should be more detailed in the final document. It is also unclear whether wetland areas within the management unit will be affected.

74-1

It is our belief that proper guidelines and selected mitigative measures should be coordinated with any comprehensive plan that you subsequently adopt. The final document should also consider all practicable means and measures that could best satisfy identified needs while at the same time protecting, preserving, and enhancing the quality of the environment, restoring environmental quality previously lost, and minimizing and mitigating unavoidable adverse effects. We are especially concerned about maintaining a reasonable riparian buffer strip in association with each stream corridor. Also, bank protection is important in helping to reduce potential sedimentation and temperature increases.

74-2

Specific Comments:

74-3

page 5, para 2. There is no discussion concerning the adverse impacts the proposed management would have on the fish population in the area. Additional data should be provided in the final statement.

74-3

page 24-25, table 1-5. The "summary of impacts" table does not reflect any impacts on fish or their associated habitat. This category should be included.

74-4

page 45, para 2. There is no indication what portion of the existing riparian habitat will be altered. This should be addressed in the final document.

74-5

page 66, para 4. Discussion of Impacts on riparian habitats and streams by erosion, landslides, nutrient depletion and road construction should be expanded and presented in more detail in the final document. Mitigative measures should be implemented to prevent any long term adverse environmental impacts.

74-6

page 77, para 6. A number of factors which can adversely affect fish are presented, however, the amount of impact the various alternatives would have has not been discussed.

74-7

pages 77-78. The harvesting of timber does have an adverse impact on fish habitat by removing the riparian zone, changing water yields and increasing the sedimentation. Therefore, these areas should be quantified as much as possible and included in the final document.

We appreciate having had the opportunity to review this draft. Please feel free to contact us if you have any questions concerning our comments. We would also appreciate receiving a copy of the final statement when it becomes available.

Russell D. Peterson

Russell D. Peterson

Response to comments in Letter 74.

74-1 Wetland areas are included as riparian habitats and thus would be affected by each alternative as described in the DEIS. Chapter 3, Impacts on Animals, page 75. It should be noted that the percent of riparian habitat associated with wetlands is quite small on BLM lands within the EIS area.

74-2 See response to comment 5-3.

74-3 Impacts are described in Chapter 3 of the EIS. Because the analysis in Chapter 3 concluded the impacts on fish populations would not be significant, those impacts are not listed in the summary section of Chapter 1.

74-4 Refer to EIS Chapter 3, Vegetation Section and Appendix C, Table C-4, for discussion on the impacts to riparian areas from each alternative.

74-5 See response to comments 5-3 and 74-4: as indicated on page 26 of the DEIS, additional environmental assessment of timber sales will address riparian habitat, erosion, landslides and road construction.

74-6 See response to comment 5-3.

74-7 See response to comment 74-3.

727 Braunda Drive
 Rouling Ave 97470
 August 19, 1982

Mr. James Hart
 District Manager
 Bureau of Land Management
 777 N.W. Garden Valley Blvd
 Rouling Ave 97470

Dear Jim:

I would like to submit the following comments on the Rouling Timber Management Draft Environmental Impact Statement.

I recommend that in the final statement the preferred alternative be changed to alternative 2. Alternative 2, in my opinion, will more closely meet the goals stated in the BLM Policy Statement for Multiple-Use Management of O&C Lands, than the other alternatives. It will provide a maximum output of timber production while fully recognizing the resource objectives for water quality, wetlands, threatened and endangered species, habitat management, and recreational areas.

I would like to emphasize the

III

severe adverse effect on environment for people. The same is true for county and local government services.

The United States, during recent years, has undergone drastic economic changes. The country is on the verge of financial disaster. It is no longer possible to justify wasting, locking up or hoarding natural resources that

are desperately needed to support our population. Maximum timber production on the Rouling District will make a very significant contribution to the national economy and help with the international balance of payments. Added to the yield of benefits from other government timber holdings the impact could be very great.

Regarding alternatives 7 and 8, I feel that these alternatives do not meet BLM stated policy objectives for timber management and production or Section 1 of the O&C Act. These are not viable alternatives and should not be included in the final statement.

78-1

II

importance of the contribution made by timber production to the local economy. It has a very great influence on recreation because without jobs and income people either cannot afford to enjoy recreation opportunities or worse. Yet may be forced to move to jobs in distant areas. I personally do not feel that a major objective of the BLM should be to provide recreational attractions for visitors from distant locations. This is adequately met by the National Park Service and the U.S. Forest Service in this area.

Timber production can have a major beneficial effect on environment human environment. Our environment is where we live, work and play. Without timber based revenue our homes will deteriorate, or worse yet many families may lose their homes, work places will close or become shabby, schools will offer limited curricula and a restricted athletic program. Without maximum timber production there can be a very

IV

A few specific comments follow.

1. The commercial forest land base should be maintained at as high a level as possible. The most proficient forest manager cannot maintain harvest levels with a continually diminishing land base.

2. Stumpage values for the plan period may be unreasonably high. I recommend a reevaluation.

3. I must question the BLM Management Cost in Table B-6 of \$557.95 for establishing a stand on an acre. Are these current costs?

4. Trying to offset a reduction in Volume Production Base by increased levels of investment in management practices is an approach with considerable risk. Again I recommend maintaining the land base for production.

5. I note that there is no Surplus Inventory and that it is not possible to depart from even-flow in the first decade without causing a later decline in harvest level. With 190,000 acres in mature and overmature stands (or 47% of the forest land) it is difficult to understand this. If this is a fact, I would recommend that it be fully

78-2

78-3

78-4

78-4 | explained in the final statement.

I am impressed with the volume of information presented in the draft statement. The personnel responsible for its preparation are to be complimented.

*Sincerely,
Harold E. Anders*

Response to comments in Letter 78.

78-1 See response to comment 12-1.

78-2 Table B-2 has been revised to increase the number of baselines for forecasting revenue.

78-3 See response to common issue 5.

78-4 The existence of "surplus inventory" is closely linked to both actual and potential harvest, as described in the DEIS, Appendix C, page 127. The lack of surplus inventory for the Roseburg District is partly due to the high level of intensive management practices scheduled.

80



ASSOCIATED OREGON LOGGERS, INC.

AUTUMN HOUSE
1077 GATEWAY LOOP
SPRINGFIELD, OREGON 97477
(503) 746-4311

F.F. "Monte" Montgomery
President

August 20, 1982

**ASSOCIATED OREGON LOGGERS ANALYSIS
OF THE BLM ROSEBURG DISTRICT
DRAFT ENVIRONMENTAL
IMPACT STATEMENT (DEIS)**

James E. Hart
District Manager
BLM Roseburg District Office
777 NW Garden Valley Blvd.
Roseburg, Or 97470

Dear Mr. Hart:

Associated Oregon Loggers (AOL) is submitting the attached analysis of the Roseburg District draft environmental impact statement (DEIS), in response to your request for comments. We enthusiastically support the District's obvious commitment to increase timber supply, jobs and county revenues. AOL has maintained its commitment to long range forest planning, despite the current economic crisis, and we applaud the District's efforts to plan for a future where once again there is a healthy demand for Oregon's forest products.

Since the State Director has advised the Roseburg District that the proposed action must be amended to conform with new policy direction, AOL will withhold its final support of an alternative until we have the opportunity to review the new proposed action. We do believe, however, that Alternative 2 provides a good foundation for the new proposed action.

As was suggested by Bob Alverts, your planning coordinator, our comments in the attached analysis focus on the adequacy of the DEIS to meet laws and regulations. AOL believes that the DEIS does not comply with several sections of the BLM planning regulations (Subpart 1601), related to process papers, consistency with State goals, wildlife habitat, economic and budget analysis, plan implementation. AOL also believes that the proposed action does not comply with the O & C Act. AOL makes a number of recommendations for improving the DEIS to bring the final environmental impact statement (FEIS) into compliance with laws and regulations.

We look forward to continued involvement in your planning process.

Sincerely,
Sue Joerg
Sue Joerg
Forest Planner

cc: Executive Committee

Dan Fugate

Bob Birkenfeld

F. F. (Monte) Montgomery

Bob Lindsay AFFIRMATIVE ACTION - EQUAL OPPORTUNITY EMPLOYER

The discussion below addresses six areas of the DEIS, which AOL believes are inadequate to meet BLM laws and planning regulations.

O & C ACT

The Solicitor General's opinion, dated September 8, 1981, concluded that the O & C Act mandates forest production as the dominant use on BLM managed O & C lands. The opinion further states that "the Bureau must see how wildlife protection goals can best be achieved on land not available for timber production. In the case of those areas of land where direct conflict in use will occur, the Bureau may choose one over the other provided it has analyzed its choice in the context of the principle goals of each Act and is satisfied that the particular choice has not significantly encroached upon the overall effect of these goals."

This direction from the Solicitor General implies that the BLM must prepare a well documented analysis or process paper which:

1. Assesses the location, quality and quantity of wildlife habitat;
2. Defines adequate protection for wildlife habitat;
3. Distinguishes between O & C lands, and public domain lands;
4. Locates wildlife habitats, for each alternative, on O & C lands not available for timber production; and,
5. Documents the economic and social consequences of allocating O & C lands to wildlife habitat, if this allocation is necessary.

Although, this opinion has been in circulation for over a year now, and the Roseburg District states that they did an analysis of how to meet wildlife habitat concerns on non-productive O & C lands, there is non process paper documenting compliance with the O & C Act as Solicitor's opinion. Section 1601.7-1, of the BLM planning regulations, states that:

"Records pertaining to the analysis and conclusions reached by the District Manager and staff throughout the planning and environmental analysis process shall be maintained. ...Such records shall be kept filed together and shall be available on request for public review."

*AOL recommends that a proposed action be developed, which complies with the O & C Act and Solicitor's opinion.

*AOL recommends that the final environmental impact statement (FEIS) include a process paper which documents the allocation of O & C lands to timber production and wildlife habitat. This information is of critical public concern, especially with the new Washington and State office direction on this issue.

FORESTRY PROGRAM FOR OREGON

As we discuss below, maintenance of the commercial forest land (CFL) base at a reasonable level, is of great concern to AOL. We noted in Table 1-7 that all alternatives, except #1 and #5, are inconsistent with Board of Forestry objective regarding maintenance of the CFL base. Section 1601.4 (c) (1), of the BLM planning regulations, states that resource management plans will be "as consistent as possible with existing officially adopted and approved resource related policies, plans or programs of...state agencies..." The proposed action reduces the land base by 43,779 acres (-11.6%). AOL believes that the BLM has not designed the proposed action to comply with Section 1601.4 (c) (1) as required.

*AOL recommends that the FEIS reconsider the size of the commercial forest base in each of its alternatives. The planning regulations, we believe, call for at least minimal consistency with the state's land base objective. The BLM must increase the size of the proposed actions commercial forest land base in order to comply with 1601.4 (c) (1).

WILDLIFE HABITAT

Over 52,000 acres of the Roseburg District have been allocated to wildlife habitat or visual management areas. At the end of the 10th decade of the projection, 18 owls are expected using the 300 acre management assumption, while no owls are expected using the 1,000 acre assumption. Furthermore, it is projected that a "medium" amount of degradation of scenic quality, will occur.

-2-

*AOL recommends that an economic and budget analysis be conducted for each alternative. Only in this way can the "revenue" criteria be properly used to select the proposed action, which will not only provide a high level of contribution to local and public revenues, but will also have a budget that is fundable.

PLAN IMPLEMENTATION

The proposed action reduces the commercial forest land base by 43,779 acres (-11.6%) and increases the constrained land base by 38,161 acres (+73.3%). Precommercial thinning acres are increased 28,429 acres (+230%), fertilization is increased 56,029 acres (+100%), site preparation is increased 23,723 acres (+30%), and planting is increased 15,795 acres (+30%). Finally, the required budget for the forest management and development would increase from 50.7 to 83.8 million (Table B-7) dollars in decade 1, a 65% increase.

From these figures, it is apparent that the District has built a very costly proposed action in order to accommodate multiple uses of the forest resource. In order to increase the allowable cut level, on a reduced land base, a costly array of intensive management practices has been proposed by the BLM. Since the BLM now obtains its funding for forest management by congressional appropriation, the huge budget requirement of the proposed action (a 65% increase from the present budget) may not be able to be completely funded.

If the Roseburg District does not receive full funding for the proposed action, then the level of intensive management scheduled cannot be achieved and the annual allowable harvest level must be reduced. Certainly the most cost effective way to raise harvest levels is to maintain the number of commercial forest land acres allocated to intensive management. Smaller quantities of costly intensive management practices could be utilized on a larger land base to reach the same allowable cut level.

*AOL supports the choice of implementable plans and the maintenance of the commercial forest land base at a reasonable level. The proposed action is not acceptable because of its reduced land base and high budget requirements, which hinder its ability to be implemented. Development and approval of unimplementable plans certainly violates Section 1601.0-2, of the BLM planning regulations, which states that the objective, of Subpart 1601, is to "improve resource management decisions on public lands..."

-4-

Section 1601.5-4 (a) (9) of the BLM planning regulations, which describes the analysis of the management situation process, states that:

"The District manager shall analyze the management situation to determine the capability of the public land resources to respond to: Needs, concerns and opportunities identified through public participation..."

This section further states that critical threshold levels should be considered during the formulation of plan alternatives.

80-2

80-3

*AOL recommends that in order to fully comply with these regulations, the BLM should conduct a trade-off analysis of the 52,047 constrained acres to document the effects (in terms of allowable harvest and budget requirements) of incrementally adding these acres back into the intensive timber management base. The BLM should further provide a listing of spotted owl pairs by decade for each alternative. This should include the amount of habitats under both the 300 acre and 1,000 acre assumption.

ECONOMIC AND BUDGET ANALYSIS

The BLM conducted several economic and budget analyses, on the proposed action for the Roseburg District, as requested by the public.

Section 1601.5-2 (a), of the BLM planning regulations, defines the purpose and use of planning criteria.

"Planning criteria shall be used to evaluate alternatives and to select one alternative to serve as the proposed resource management plan."

One of the criteria developed for the Roseburg District states that:

"Each alternative was evaluated according to the degree to which it would...provide for a high level of contribution to local public revenues from resources and activities available on public lands."

Since economic and budgetary analysis were conducted, only on the proposed action and Alternative 3 it is difficult to understand how the BLM used the above criterion to select the proposed action.

-3-

Response to comments in Letter 80.

80-1 BLM planning regulations became effective September 6, 1979. The December 3, 1979 Federal Register included a display of BLM planning efforts underway on that date. Roseburg District was shown as a Category C, district-wide Management Framework Plan revision to which the new regulations were only partially applicable. Although regulation 1601.7-1 is applicable to the Management Framework Plan, through the development of a preferred alternative, it does not apply to the Timber Management EIS.

The preferred alternative and other alternatives considered have been presented in a summary brochure prepared in September 1981, which indicates land use allocations applicable to EIS Alternatives 1, 4, 6 and 8. Refer to DEIS, Appendix C, Tables C-2, C-3, and C-4 for allocations by alternative. Analysis in the FEIS includes Alternative 9, which is based on the new O&C Forest Resources Policy (Appendix A).

80-2 See response to common issue 4.

80-3 The entire 43 CFR 1601.5-4 regulation section is not required for any transition period Management Framework Plan. Also, see response to comment 11-8.

80-4 See response to comments 68-19, 68-21 and 69-1.



NORTH WEST TIMBER ASSOCIATION

1355 OAK STREET - P.O. BOX 5554 - EUGENE, OREGON 97405
TELEPHONE: (503) 686-9603

August 20, 1982

Mr. James Hart

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August 20, 1982

The remainder of our comments will fall into three general categories: I) The Planning Process; II) Adequacy of the EIS; and III) Identification of a Proposed Action.

I) THE PLANNING PROCESS

Since the outset of the planning process a concern has existed over the fact that the BLM's procedures did not provide for a change in the "Proposed Action" (PA) between the Draft and Final EIS. This seems to have changed in recent months since the Salem District indicated they would consider changing the PA between the Draft and Final EIS. Furthermore, the July 15, 1982, Criteria for Application of O & C Forest Policy from Director Bob Burford directs that the new criteria be utilized in the Roseburg EIS process.

It is clear, from discussions with the District staff, that how this will be implemented is still a matter of debate to be addressed in analysis of input to the draft. One of the purposes of an EIS and its public review is to focus on a proper decision. Changes from the current PA in the final decision will be necessitated by the Director's criteria. Therefore, it seems only logical that the process be facilitated by a change in the alternative identified as the PA in the Final EIS. This will not, however, require that the PA in the Final EIS be the implemented decision since the draft decision process remains intact.

Contrary to State memorandum OR-82-601, it is our suggestion that the planning team attempt to identify, from the existing alternatives, the one which best meets the directive on O & C criteria, other laws and decision criteria and identify it as the PA in the Final EIS. Each alternative should then be analyzed as to how well it conforms. The EIS will then point out changes that may be needed in the remaining step of identifying the final decision. There is no reason that this cannot be most efficiently accomplished with a short form Final EIS.

II) ADEQUACY OF THE EIS

One of the main purposes of public review of a Draft EIS is to identify areas where the statement may be inadequate. We feel that additional analysis is needed in a number of areas.

A) **LAND BASE TRADE OFFS.** The reduced timber production from the constrained timber production base represents some opportunity cost in terms of timber production foregone. While a comparison between alternatives shows the over-all effect and estimates can be made on an average per area production basis, specific effects by land allocations are not isolated. We believe that the harvest contribution foregone compared to full intensive management for each special land classification, as identified on page 124, should be shown. A display similar to what is needed can be found on page B-3 of the Eastside Salem Draft EIS.

B) **BUDGET ANALYSIS.** The EIS deals not just with environmental effects, but also with economic impacts. Since the harvest level will vary with the amount of funding that is available this will have a critical effect on local economics.

Mr. James Hart
District Manager
Bureau of Land Management
777 NW Garden Valley Blvd.
Roseburg, OR 97470

Dear Mr. Hart:

On behalf of North West Timber Association I am pleased to comment on the Draft EIS for the District's new Timber Management Plan. Our Association consists of small independently owned lumber and plywood manufacturers in western Oregon and southwestern Washington, including several firms which purchase timber directly from the Roseburg District. Our members are almost exclusively dependent on federal land for their timber supply thus making the decision for the Roseburg District critical to the survival of the firms and the economic stability of the communities in which we operate.

We have been deeply involved in the planning activities of all the western Oregon districts and are pleased that the content of your EIS has recognized many of the problems that appeared in earlier efforts. Bureau of Land Management planning is a complex and difficult task. In all fairness, we compliment you, as well as the District and State staffs, on the open and professional manner in which you have conducted the planning effort and attempted to accommodate the many publics interested in your planning.

At the outset we believe it is essential that the time frame of the planning decision and its relationship to current economic conditions be put in perspective. The new plan will be long term in that it considers effects of continuing the plan for many decades. However, in reality, it is relatively short term in that it will have an operational life of approximately one decade after which adjustments will be made in a new plan to reflect changing information and conditions. We are currently in the worst economic recession the local industry has ever seen and most--if not all--operations in the county are struggling with the very basis of survival. Clearly this has temporarily affected the demand and value of stumpage and it may be several years before conditions return to "normal". We as an industry are optimistic, however, that a turn around will occur and that timber supply will return as the major controlling factor in the health of our industry and local economy. When this will occur cannot be predicted, but when the new plan is implemented in 1984 we should be on our way.

Mr. James Hart

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August 20, 1982

Mr. James Hart

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August 20, 1982

On page 64 of the EIS it states, "A basic assumption of the analysis is that sufficient funding and personnel will be available for implementation of the final decision." We feel that this is an extremely weak assumption which deserves attention in the Final EIS. Blind acceptance of this assumption can lead the reader into a false feeling of security. Our concern is particularly heightened when one notes that the projected annual costs of intensive management for the proposed action (page 116) of \$8.411 million is an increase of 42 percent over the current program of \$5.9 million; and further, that these figures do not include either District or State Office administrative overhead which runs several million dollars per year. While the long run projections appear favorable, we are particularly concerned with the reliability of the assumption in the first few years of the program. Economically efficient harvest increases will be especially important as we work our way out of the current economic conditions. The recent reduction in the annual sale programs at Medford and other districts due to budget constraints indicates the reality of our concern.

While the BLM cannot be expected to forecast the willingness of Congress to approve budgets, we do believe that the decision makers and the public should know the relative cost and risk of various alternatives. Therefore, we request that the Final EIS display--for each alternative--the following information:

- 1) The average annual cost of the intensive management program during the first decade with the cost isolated as shown for the PA on page 116, table B-1.
- 2) The administrative and overhead costs, including an appropriate share of State Office costs, such that when added to number 1) above, it will show the total cost of operating the district.
- 3) The "current situation" values for items 1) and 2) above.
- 4) An analysis which would show the sensitivity of the alternative to fluctuations in budget levels. This would basically begin at the harvest level proposed for each alternative and display what the harvest level would be at reduced budgets, in five percent increments, until the levels reach what you would consider the minimum that could be expected.

C) **THE SPOTTED OWL.** When the EIS states that Northern Spotted Owl "...is dependent on old-growth, closed-canopy forests..." (page 78) it reflects the attitude that has polarized an important issue. For several years industry has been urging the BLM and other federal agencies to seek out more economically efficient management strategies for providing for the owl. Instead, the agency has continued to accept without question the opinions of the Spotted Owl Committee which continues to base its views only on what the owl appears to use or prefer--not what it needs to survive.

Even though the Director's criteria clearly established the BLM's policy regarding the owl on O & C acres, this has not reduced industry's concern for the bird. As was pointed out by the Fish and Wildlife Service in their January 1982,

Status Review, the species is not Threatened or Endangered. Due to vast acres of mature and old growth on the District it is clear that opportunity to protect the owl without reductions in timber harvest levels exists on the Roseburg District. The Draft EIS fails to recognize this fact, instead it indicates that the owl may disappear completely in one hundred years and states, "...it is not possible to predict when various pairs would have their habitat removed." This doom-day, hide-your-head-in-the-sand approach must be corrected in the Final EIS.

During the scoping process on the District, I requested that the BLM analyze the opportunity to maintain the owl habitats through each of the first several decades of the planning horizon. This request was not met. However, I believe it is extremely important for the public to see and understand the results of such an analysis. We again request that it be included in the Final EIS. The Final EIS should contain an array which, beginning with current owl populations, shows for each alternative and each decade the number of 300-acre habitats and pairs of owls that can be maintained to the end of each decade. This should be carried through at least the first four decades and should not contain replacement stands. It should not be necessary to analyze the 1,000-acre core concept since the letter transmitting the proposed revision of the Spotted Owl Management Plan indicated little confidence in this figure and only asked that such allocation be maintained for a period of five years. Clearly, during the first decade of the plan the District population will not drop below viable population levels even if no attention is given to the owl. While the development of this array will require many "best estimates" this should not be a serious concern considering that most of the spotted owl policies today, and many of the outputs for other resources shown in the EIS, are indeed little more than best estimates by the various specialists. The basic assumption that must be used in developing the array is that the BLM would schedule harvest units in a manner that will maintain the greatest number of habitats for the longest possible time.

The analysis is very important because it will give the public a more realistic view of the spotted owl issue and will provide some idea as to how much time we have to complete our research and study.

Another important addition to the EIS should be to discuss and describe the owl and old-growth research that is planned for the next decade including what will be done by the BLM and other agencies; and exactly what type of information will become available.

When the Preferred Land Use Alternative was presented to the public for comment in September 1981, an important concept was presented and contained in the statement on page 23:

During the planning period (the next decade) there will be minimal impact on habitats of the Roseburg District.

The discussion then pointed out that it would be four to five decades before the impacts might become critical. This whole discussion was eliminated from the Draft EIS. To those of us in the public looking for rational solutions

Mr. James Hart

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August 20, 1982

to the problem of wildlife conflicts, the exclusion was unfortunate. It is a common misconception by the public that some species of wildlife are about to be wiped out in the District. The BLM must take the responsibility of demonstrating that the fears are unfounded and that reasonable wildlife management policy is part of the Bureau's activities.

83-8 D) AREAS OF CRITICAL ENVIRONMENTAL CONCERN (ACEC's). The EIS is inadequate in its discussion of ACEC's and Research Natural Areas (RNA's). More complete descriptions of the areas, why they are considered, and the decision criteria that will be used should be presented. Before any designation is final it should be demonstrated that such allocations are justified and the planned management explained. In the case of RNA's it should be shown that the proposed areas are the best candidates available in the state for the particular ecological unit being protected.

83-9 E) WILD AND SCENIC RIVERS (page 27). The Final EIS should indicate which rivers in the District have been included in the National Park Service Inventory, the rating assigned in the Inventory, and how long the inclusion in the Inventory is expected to restrict management.

83-10 F) FORESTRY PLAN FOR OREGON. The analysis of alternatives in terms of compliance with the goals of the Forestry Plan for Oregon needs to be expanded, especially since compliance is a criteria identified by the Director. The analysis should not simply group the alternatives into classes of consistency as in table 1-7, but should rank each alternative from most consistent to least consistent. Where possible the analysis should deal with quantified output values to demonstrate the level of consistency.

83-11 Another important indication of the policy of the State of Oregon regarding the management of the O & C lands is House Memorial Number One, which was passed in the last regular session of the Oregon Legislature. The Final EIS should present the Memorial and indicate the degree of compliance of each alternative.

G) FACT VERSUS OPINION. There are a number of discussions within the EIS which appear to be oriented at promoting particular viewpoints about the management of the BLM lands that are contrary to the mandates of the O & C Act. These discussions utilize "buzz" words and technical jargon that sounds impressive to the general public, but actually contribute little to the value of the EIS. Examples are the discussions of old-growth and forest productivity on page 42 and ecosystem management on page 71. The statement that the symbiotic relationships in old-growth stands "...may prove critical to long term timber production..." is clearly a less than professionally accepted opinion. These discussions also failed to draw the important distinction between forest productivity in natural stands and productivity in managed stands.

83-12 H) NON-TIMBER BASE OUTPUTS. A major short-coming of the Draft EIS is that it tends to deal just with that portion of the District which meets the TPCC criteria for intensive management. Non-timber outputs from the withdrawn lands are extremely important to the public and should be fully discussed and displayed in the EIS.

Mr. James Hart

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August 20, 1982

I) DEPARTURES. We are pleased that a discussion of departure alternatives was included in response to our proposal. While the review was incomplete it did indicate that opportunities to meet social needs may exist beyond the rigid even-flow concept while still meeting the basic values of sustained yield management.

III) IDENTIFICATION OF A PROPOSED ACTION

As discussed earlier it is desirable, if not required, that the proposed action be changed in the Final EIS. Since further adjustments will be possible in the decision process if the analysis indicates they are needed, we can see no reason for the BLM to attempt to generate any new alternatives. Rather, our review indicates that Alternative 2 will meet the requirements of the law and the criteria for management of the western Oregon BLM lands as set out by the Director. Alternative 2 should be identified as the Proposed Action for evaluation in the Final EIS.

Let us look at some of the key criteria embodied in the O & C Act and management criteria in relationship to the outputs indicated for Alternative 2. The Director set out the policy in seven specific criteria:

Criterion 1) Provide an optimum and non-declining yield of wood products to enhance the economic stability of local communities and industries while providing for other forest values as required by law. Optimum is defined as approaching, meeting, or exceeding the State Forestry Plan for Oregon goals.

Alternative 2 does not fully meet this criterion in that the land base and harvest levels are less than Alternative 1, which conforms with the Forestry Plan goals. However, in order to meet the other criteria Alternative 2 would appear reasonably optimum.

Criteria 2 and 3) Limit or exclude timber production to protect "...high public recreational value..." at outstanding sites and "...protect and maintain scenic quality in areas of important visual value..."

Alternative 2 meets these criteria with the allocation of 8,383 acres to visual management and 1,185 acres for recreation management. This provides assurance that key resource areas such as the North Umpqua Corridor are protected.

Criterion 4) Maintaining water quality at federal and state standards by incorporating mitigating measures in forest management.

Alternative 2 clearly will exceed this criterion with, in addition to mitigation, the assignment of over 18,000 acres to the constrained timber base for riparian zone management.

Criterion 5) Management of non-timber forest values. The criterion provides for allocations, after analysis of effects; for the protection of wetlands--including riparian zones--and providing habitat for Threatened and Endangered species.

Mr. James Hart

-7-

August 20, 1982

Alternative 2 provides for non-timber values. The 38,530 acres of the District withdrawn from the intensive timber base and the 24,786 acres under constrained management certainly meet the requirements. Over 6,000 acres are provided to protect the bald eagle, osprey, and heron habitat.

Criterion 6) This criterion deals with additional allocation of commercial forestland. It prohibits allocations "...unless such action is found necessary to protect future options for maintenance of seral stage distribution assuring continued high timber productivity."

Alternative 2 clearly protects future options since over 140,000 acres of mature and old growth will remain on the District at the end of the planning period; thus, no such allocations are necessary. It may be desirable to set out some harvest scheduling constraints for the first decade to assure that a proper cross-section of desirable units is maintained through the decade, but this would not require withdrawal from the harvest calculation base.

Criterion 7) This criterion urges maximum use of intensive management practices to the degree feasible and within economic efficiency measures.

The effect of this criterion will be shown from further analysis. The practices with Alternative 2 meet this criterion as well--if not better--than the other alternatives.

In conclusion, we believe the next step in the planning process should be to identify Alternative 2 as the proposed action in the Final EIS. The analysis of this alternative and application of criteria to all alternatives in the review will then indicate what changes may be needed in making a final decision.

Sincerely yours,

Dennis Hayward

Dennis Hayward
Field Forester

1m

cc: Robert Burford, National Director, BLM
William Leavell, State Director, BLM

Response to comments in Letter 83.

83-1 See response to common issue 4.

83-2 See response to common issue 2.

83-3 Neither the O&C Forest Resources Policy (Appendix A) nor the district's original planning criteria (Appendix C) suggest that a choice among alternatives will be based on comparative costs. Table B-1 in the FEIS has been expanded to show the forest management costs of Alternatives 4 and 9.

83-4 See response to comment 69-1.

83-5 See response to comment 11-8.

83-6 There is a five-year research and development program designed to coordinate the research on interrelationships between wildlife and old growth forest habitat. Participants include the BLM, USFS Pacific Northwest Forest and Range Experiment Station, USFS Regions 5 and 6.

BLM's involvement is fully described in a document titled "BLM Role in Old Growth Forest/Wildlife Habitat Research, Western Oregon" (available at the Oregon State Office).

BLM will provide financial and technical support to the project as well as conduct some intensive studies and research. Objectives of the old growth forest/wildlife habitat research program are as follows:

1. Identify animal and plant species dependent on, or which find optimum habitat in, old growth forests.
2. Describe, classify, and inventory old growth forest ecosystems.
3. Determine biological requirements and ecological relationships of species found in old growth.
4. Evaluate old growth management alternatives and their economic impacts.

Research questions related to the northern spotted owl will be focused on objectives 1 and 3, as noted above.

Details on specific research projects are described in the Action Plan prepared by the Program Leader, USFS Pacific Northwest Forest and Range Experiment Station, Olympia, WA.

83-7 See response to common issue 1.

83-8 See response to comment 11-3.

83-9 The nationwide rivers inventory (Jan. 1982) includes two rivers involving BLM lands in the Roseburg District: the North Umpqua River from the Umpqua National Forest boundary to Rock Creek and the Umpqua River from the confluence of the North and South Umpquas downstream to the Roseburg-Coos Bay District boundary. No priority rating is assigned in the inventory. Interim protection will be given to inventoried rivers pending resolution of the Wild and Scenic Rivers Act eligibility issue. BLM efforts to determine Wild and Scenic Rivers Act eligibility are expected to be delayed until the next planning cycle.

83-10 Chapter 1, Table 1-7 has been revised in the FEIS. Also, see response to comments 4-1 and 4-3.

83-11 The Oregon Legislative Assembly, 1981 Regular Session, House Memorial 1, is included as an attachment to Letter 71. Consistency with House Memorial 1 is believed to be the same as consistency with Forestry Program for Oregon goals 1 and 2, shown in the EIS, Chapter 1, Table 1-7.

83-12 Non-timber outputs from the withdrawn lands are approximated by the analysis of Alternative 1.

85



Department of Fish and Wildlife

506 SW MILL STREET, P.O. BOX 3503, PORTLAND, OREGON 97208

August 20, 1982

Mr. James E. Hart
Roseburg District Manager
Bureau of Land Management
777 N.W. Garden Valley Boulevard
Roseburg, Oregon 97470

Dear Mr. Hart:

Attached are the Department of Fish and Wildlife comments on the Roseburg Timber Management Draft Environmental Impact Statement.

The Roseburg BLM has the best potential of any other BLM district in Oregon to provide viable populations of all wildlife species found on the district. It is unfortunate that the proposed action does not make that provision. Of greatest concern is the loss of cavity nesting habitat, and less protection of northern spotted owls than the minimum number recommended by both the Oregon Spotted Owl Management Plan and the Roseburg BLM Advisory Board.

We are also concerned with soil erosion, debris avalanches and stream sedimentation that will result in degraded fish habitat when natural production of anadromous fish has been in increasing jeopardy.

I would like to support your proposed plan but cannot endorse a land use plan that does not at least maintain viable populations of all existing species of wildlife. I urge your proposed plan be altered to provide for those needs.

Sincerely,

John R. Donaldson
John R. Donaldson, PhD
Director

JRD:RDC:d1w

OREGON DEPARTMENT OF FISH AND WILDLIFE

Comments on

Bureau of Land Management

Roseburg Timber Management Environmental Impact Statement

August 20, 1982

PNRS 820628-D68-4

After staff review of the draft EIS, we would like to see the following items clarified or addressed in the final EIS. The items are of significant concern to the Department.

General Comments

Mining -

We are aware that the plan is a timber management plan, but we are also concerned with the impacts of mining on Roseburg District lands. Mining has had severe adverse impacts on the fish resources of the area and adequate control must be exerted if full use of both fish and mineral resources is to be realized. We trust that the FEIS will address mineral resources, and the measures that the BLM will take to protect fish resources during mineral exploration and development.

Mitigation of Impacts -

85-1

85-2 We mentioned in our input dated February 5, 1981 and June 12, 1981 that the impacts of other resource development can be mitigated. Expected mitigative techniques need to be clearly outlined in the Alternatives. Snags, dead and downed material are wildlife habitats that can be provided during timber harvest operations. Herbicide applications can have adverse impact on forage production for big game but the impacts can be mitigated by considering the supply of forage nearby and applying herbicide on a portion of the treatment area if forage is in short supply. Road closures can prevent harassment of big game where necessary. These are examples of mitigative techniques that can be provided regardless of the alternative selected.

Maintenance of Viable Populations of Wildlife -

According to the DEIS only Alternative 8, if implemented, will maintain viable populations of indigenous species. The Department cannot endorse any proposed land use plan that does not at least maintain all existing populations of wildlife.

Specific Comments

Page 4 - Summary of Environmental Consequences

85-3 Please clarify the paragraph describing the environmental consequences on water resources. That paragraph discusses the impacts of all alternatives except the preferred alternative. Sediment yields would increase under Alternatives 1, 3 and decrease under Alternatives 5 through 8. What is the expected impact of the preferred alternative on sediment yield? The information supplied in the EIS suggests sediment yield would increase as a result of implementing the proposed action.

Alternative 4 states: "this Alternative is identical to Alternative 3 except..." and Alternative 3 will increase sediment yield.

Analysis of impacts on water resources does not include fish life or animals. Under recreation there is brief reference that fishing would be adversely impacted under Alternative 1, 2, 3 and 5. Please quantify expected impacts on cold water fish.

85-4 Page 5. The section on animals needs to be expanded to discuss the impacts on fish. Increases in water temperature in Alternatives 1 and 5 would negatively impact fish. The impacts, however, of implementing Alternative 4 are not discussed and need to be clearly listed. The information presented in the EIS leads us to believe the proposed action would adversely impact fish. Sediment yield and stream temperature are already limiting fish populations of Douglas County. Page 4 of the EIS says "based on the sample five year sale plan, timber harvest activities planned in four municipal watersheds would increase water yield and sedimentation."

85-5 Page 13 and page 14 discuss land classifications being managed by Roseburg BLM. O and C lands and Coos Bay Wagon Road Grant lands are to be administered by the O and C Act of 1937 only where the Act conflicts with FLPMA. Public domain lands, of which 18,000 acres exist under Roseburg BLM jurisdiction appear to be managed in accordance with the O and C Act. What is the legal justification for managing public domain lands under the O and C Act rather than under provisions of the Federal Land Policy and Management Act of 1976?

Page 24 - Summary of Impacts

85-6 The environmental component category soils indicate that 3,072 acres per decade of Roseburg BLM will suffer loss of productivity. Please explain how productivity on 5 square miles per decade can be lost and still meet the intent of Clean Water Act, Sikes Act, FLPMA, NEPA and Executive Order 11990.

85-7 The summary of impacts lists expected changes in Roosevelt Elk and northern spotted owl populations. The chart should also indicate the changes in snag dependent wildlife and fish populations.

Page 44 - Terrestrial Animals

We agree with the statement "of special concern are snags. Snags provide optimum habitat for 33 species and are used, to some extent, by 47 other species of birds and mammals." "Recent snag surveys by district personnel revealed an average of 0.1 snags per acre in coniferous forests less than 15 years of age under BLM administration." The discussion continues indicating the snags are essential to cavity nesting birds and those birds feed on insects and play an important part in the control of forest insect pests. We believe that the maintenance of snags is important and that the Bureau should take greater measures to provide two snags per acre on clearcut lands instead of 0.1 that are presently existing.

Page 45 - Riparian Habitat

Riparian habitat on third order and larger streams represents about 3% of the forest land base, some of which has been altered by past timber management practices and is in less than optimum condition. What would be the change in allowable harvest by protecting all riparian habitat on third order streams instead of harvesting half the timber volume?

85-8 Page 66, Table 3-2 indicates the soil productivity will be lost on 12.3 square miles of land on the Roseburg District due to road construction, soil compaction and landsliding from fragile soils. More damage to soil will result from dry graveling and nutrient depletion but no data is available to indicate the extent of damage. On page 67 the discussion of water quality indicates suspended sediment will increase by 23 times the natural rate on BLM lands. According to NEPA, an environmental impact statement should list mitigative measures to reduce long-term adverse environmental impacts. What impacts on fish and wildlife resources will result from the loss of productivity of 12 square miles of BLM land and the increased suspended sediment yield from sluiceways and head-wall failures?

85-9 Page 73 - Environmental Consequences, Timber Harvest

85-10 The second paragraph of this section briefly describes the proposed modified area control management and the location of habitat diversity features in a corridor concept. The final EIS needs to show the location and the width of the modified area control corridors. It is our understanding from a meeting we had with the Bureau in 1981 that in many places, particularly the southern portion of the Roseburg District, that the corridors appeared to avoid productive BLM lands and, instead, were routed through private lands over which the BLM has no control. The Final Environmental Impact Statement should predict the effectiveness of these corridors and how they tie in to corridors proposed by other BLM districts.

85-11 Page 73 - Timber Harvest, Third Paragraph, First Sentence:

85-12 Late in the third paragraph, the statement made: "the loss in useable old-growth habitat is greater than it appears in appendix F..." In the final impact statement, please indicate how great the loss in useable old-growth habitat actually is.

Page 74 - Timber Harvest, First Paragraph, First Sentence:

We agree with the statement that only Alternatives 6, 7 and 8 will assure the maintenance of viable populations on animals throughout the Roseburg BLM.

Page 74 - Timber Harvest, Fourth Paragraph, First Sentence:

This paragraph discusses the Tyee area and its importance to elk that presently exist in that area. Please explain in the final impact statement why there are no long-term provisions for retaining mature or old-growth forests beyond the fourth decade in the Tyee area.

Pages 74-75 - Timber Harvest, First Paragraph

These two pages discuss the quantity of snags left after timber harvest and the importance of snags in maintaining viable populations of wildlife dependent on snags. The quantity of snags left, at today's rate of cut, (0.1 snag per acre) is well below that needed for viable populations of dependent species. Two snags per acre has been shown to be the minimum number needed to provide viable populations of those species.

85-13 Table 3-10 on page 75 indicates the preferred Alternative will provide snags at a level that will depress the population of snag dependent species to 20-30 % of potential. That level will not maintain viable populations of those species. Table 3-10 also indicates that Alternative 6 and 7 might maintain viable populations, and only Alternative 3 would surely allow viable populations to exist. It is possible and desirable to leave snags during harvest operations. In the final impact statement, please explain why mitigative techniques will not be implemented that will assure the continued existence of snag dependent species.

Page 76 - Paragraph Two, First Sentence:

We agree that without mitigating prescriptions, impacts on elk populations would be more extensive than those shown in Table 3-11, page 79. Table 3-11 is based upon forage-cover ratios generally accepted by wildlife biologists in the Roseburg area.

Page 77 - Second Paragraph, First Sentence:

Discussed are the impacts of pre-commercial thinning on big game. Discussion indicates that pre-commercial thinning can impede the movement of big game if slash is unremoved. According to the DEIS, slash will not be removed, thereby, adversely impacting big game. Please explain in the final EIS why travel lanes will not be provided for big game or why slash will not be removed from thinned areas.

Page 77 - Transportation System, First Paragraph, First Sentence:

The five year timber sale plan shows about three miles of road would be built on fragile or unstable soils adjacent to streams with fishery values. If sedimentation increases, the impacts would be adverse and be significant. Earlier in the DEIS, a statement is made that road construction does lead to increased sedimentation.

85-14 In the final impact statement, please quantify the impacts on fish that will result from building three miles of road on fragile and unstable soils; also, please justify those increases and adverse impacts in light of the statement on page 78 that says: "increases in bottom sediments, according to Gibbons and Saylo (1973), cause the most damage of all factors affecting fish life."

Page 78 - Fifth Paragraph, First Sentence:

85-15 Please explain why the five year timber sale plan has 26 harvest units on unstable soils adjacent to streams with cold water fish values. It is the Department's belief that timber harvest should occur where fish habitat will not be damaged. It is evident from this paragraph in the EIS that timber sales are planned in areas that will prove harmful to fish resources.

Page 78 - Threatened and Endangered Animals

The fifth paragraph of this section indicates the five year timber sale plan will impact habitat of nearly one half the known pairs of spotted owls. We regard this loss as serious and of immediate concern.

Oregon Revised Statute 496.012 says in part: "It is the policy of the State of Oregon that wildlife shall be managed to provide the optimum recreational and aesthetic benefits... in furtherance of this policy, the goals of wildlife management are: (1) To maintain all species of wildlife at optimum levels and prevent the serious depletion of any indigenous species."

Whether or not old-growth and spotted owl habitat has been seriously depleted at this time may be debated but it is apparent that land management continued on a status quo basis will seriously deplete that habitat type in the future. The application of State law to federal land is best addressed by the legal profession but there may be a responsibility of the BLM to consider that statute in formulating land use plans.

Response to comments in Letter 85.

85-1 This is beyond the scope of the EIS which is restricted to timber management. See response to comment 2-1.

85-2 See response to comment 5-3.

85-3 The text has been revised in the FEIS.

85-4 Refer to DEIS, Chapter 3, page 79, for impacts on fish. Also, see response to comment 74-3.

85-5 See response to comment 7-1.

85-6 Refer to DEIS, Chapter 3, Table 3-2, for details. Most of the loss is due to compaction.

85-7 The text has been expanded in the FEIS, Chapter 1, Table 1-5.

85-8 Refer to Appendix C, Table C-4, for comparison of riparian areas. None of the alternatives provides for harvesting half the timber volume.

Alternatives 2, 3, 4, and 7 employ modified area control (DEIS, page 124) for the riparian zones along third order and greater streams. The sample five-year timber sale plan, as described in the DEIS, Impacts on Animals section, page 75, indicates a yearly average of 12 acres clearcut and 96 acres partial cut in the above areas. If these areas were removed from the allowable cut calculation, as in Alternatives 6, 8, and 9, an estimated decrease of 500 MCF or 3 MM bd. ft. would occur.

85-9 The DEIS indicates impacts are insignificant. Also, see response to comment 74-3.

85-10 Maps are available for inspection in the Roseburg District Office.

85-11 Corridor alternatives adopted or proposed by other BLM districts which adjoin Roseburg (i.e., Coos Bay and Eugene) have been considered and are coordinated with Roseburg District alternatives. Effectiveness will be monitored over time.

85-12 The text has been revised in the FEIS, Chapter 3, Terrestrial Vertebrates, Timber Harvest section.

85-13 Conflicts with operator safety requirements preclude snags from being left on many harvest operations in the intensive forest management base. Although options to leaving snags exist (e.g., topping trees), those options where the cut level would be reduced to the point of changing an alternative would not be planned. Also, see response to comment 5-3.

85-14 Refer to DEIS, Chapter 3, page 79 for impacts on fish. Also, see response to comment 74-3.

85-15 Adverse impacts can be mitigated through project design features, as described in DEIS, Chapter 1.

U.S. ENVIRONMENTAL PROTECTION AGENCY

REGION X

1200 SIXTH AVENUE
SEATTLE, WASHINGTON 98101



REPLY TO
ATTN OF M/S 443

AUG 22 1992

James E. Hart, District Manager
Roseburg District Office
Bureau of Land Management
777 NW Garden Valley Blvd
Roseburg, OR 97470

RE: Roseburg Timber Management Program DEIS

Dear Mr. Hart:

The Environmental Protection Agency (EPA) has completed reviewing the DEIS for the Roseburg Timber Management Program (TMP). The DEIS adequately presents the program and the various alternatives available for its implementation.

We would like to offer the following comments on Chapter 3 (ENVIRONMENTAL CONSEQUENCES) which may serve to improve the discussion in the Final EIS.

Checkerboard Lands Pattern

Lands under BLM management, in the Roseburg District as well as other western Oregon districts, are largely in a checkerboard pattern. The map accompanying the DEIS shows these lands to be widely dispersed in a "circle" surrounding Roseburg. This land distribution pattern creates special problems for managing the environmental consequences of the TMP when both the causes and the mitigating measures constantly cross and recross the boundaries of BLM lands. Any special limitations and controls to address this problem should be described in the Final EIS. It would also be helpful if the Final EIS noted any cooperative arrangements or joint actions being undertaken with adjacent land owners for managing the boundary-crossing environmental consequences of the management program.

Air Quality

86-2 We cannot locate the reference to a 30-35 mile distance for slash burn plume dispersion, beyond which "(p)ollutants ... are usually mixed by wind and dissipated..." (citing EPA, 1978). The report cited indicates that a 100 mile distance is a more appropriate measure to evaluate plume dispersion and potential effects on Class I and non-attainment areas. There are four Class I areas (Diamond Peaks, Three Sisters and Kalmiopsis Wilderness Areas, and Crater Lake National Park) and two non-attainment areas (Medford and Eugene) within 100 miles of the Roseburg District lands. The final EIS should discuss and evaluate the potential effects of slash burning on air quality in these Class I and non-attainment areas and indicate appropriate smoke control measures to avoid smoke intrusions in these areas.

We recommend that you consult with the Oregon DEQ for current data about particulate emissions from slash burns and for assistance in quantifying the effects of slash burns.

86-3 The DEIS does not discuss potential alternatives to slash burning which may provide viable air quality control measures. Various post-harvest management techniques should be included in the discussion of air quality management, or this section should reference other parts of the EIS where they may be discussed.

Human Health Effects & Potable Water Supplies

86-4 Page 86 of the DEIS indicates that the "...number of people that could be directly affected by herbicide application in the planning area is small," but presents no demographic or land user data to support this point. We recommend that quantitative information be provided to support this conclusion. This discussion should include an assessment of possible herbicide accumulation in drinking water supplies [the DEIS (p. 69) notes four municipal watersheds on BLM lands]. The FEIS should indicate whether the TMP will cause or contribute to any violations of the Interim Primary Drinking Water Regulations in the affected water supplies.

86-7 The final EIS should discuss and evaluate alternative vegetation management techniques, such as on-ground spraying or hand cutting, which may minimize unwanted environmental consequences of aerial spraying.

Finally, we recommend that you coordinate this part of the EIS with the work now being done through the Salem District Office to prepare a OEIS for BLM's Westside (Oregon) vegetation management program.

Water Quality

86-8 Page 69 of the OEIS indicates that buffer strips are expected to minimize herbicide drift or accidental spraying of water courses. However, Table 3-5 shows varying amounts of timber harvesting will take place in buffer strips. The two alternatives which include no harvesting in buffer strips show that sedimentation can be reduced by approximately 150,000 tons over the first decade of the program. This apparent contradiction should be clarified, showing any relations between extent of spraying in areas around streams, and the amount of buffer strip harvesting.

86-9 Tables 2-5 (p. 39) and 2-7 (p. 41) seem to indicate that most major streams within the Roseburg District suffer from severe sedimentation problems. Timber harvesting within the District will exacerbate this problem. The OEIS recognizes this situation but is unclear about measures which may be implemented to minimize sedimentation and to meet and maintain water quality standards. One control which appears viable is to preserve, or widen as appropriate, streamside buffer strips. Table 3-5 (p. 68) indicates that extensive cuts are to be made in existing buffer strips. We recommend that these buffer strips not be cut, and that the Final EIS identify and evaluate potential mitigation measures which could be used to reduce the sedimentation problems identified in the Draft EIS. It should also indicate whether the streams currently meet the applicable water quality standards and how each of the alternative timber management programs would affect water quality standards compliance.

86-10 EPA has rated this EIS LO-2 [LO: Lack of Objection; 2: Insufficient Information]. We appreciate the opportunity to review the report. Should you desire to discuss EPA's suggestions, you may contact Mr. Dick Thiel, our Environmental Evaluation Branch Chief, at (FTS) 399-1728 or (206) 442-1728.

Sincerely,


John R. Spencer,
Regional Administrator

Response to comments in Letter 86.

86-1 The DEIS, Chapter 1, describes Memoranda of Understanding, Cooperative Agreements, Permits and other instruments appropriate for managing the intermingled ownership pattern of the O&C lands. Also, see response to comments 4-4, 5-3, and 58-3.

86-2 The text has been revised in the FEIS, Chapter 3, Impacts on Air Quality section.

86-3 Alternatives to slash burning and other related issues will be addressed in an EIS on Vegetation Management for western Oregon. The Draft EIS is being prepared and is expected to be published later in 1983.

86-4 As part of BLM's planning process a determination of the number of residences within 1/2 mile of BLM land was made. Approximately 9,600 rural residences are within the boundaries of the Roseburg District. Of these 3,413 or 36 percent are within 1/2 mile of BLM land. Only a few percent are affected in any given year. These are detailed in site specific environmental assessments prepared for vegetation management and other projects.

86-5 This issue was addressed in the FEIS, Vegetation Management with Herbicides: Western Oregon 1978 through 1987. Refer to DEIS, Chapter 1, page 20, which incorporates the above FEIS by reference. In addition, the new EIS on Vegetation Management will address the issue.

86-6 The timber management plan is not expected to result in violations of the Interim Primary Drinking Water Regulations. BLM cooperates with the Oregon Department of Environmental Quality as well as the affected municipalities through Memoranda of Understanding, as described in the DEIS, Chapter 1, pages 27-29.

BLM timber harvesting, road construction, chemical applications, slash disposal and reforestation requirements meet or exceed the Oregon Forest Practices Act standards, as indicated on page 27 of the DEIS.

86-7 Alternative 7 in the DEIS evaluates this point. The new EIS on Vegetation Management will specifically address a no aerial spray alternative.

86-8 Streamside buffers for water quality protection during timber harvesting operations are different from those streamside buffers associated with herbicide spraying. The EIS, in Appendix C, Table C-4, identifies protective measures proposed during timber harvest operations along streams (riparian zones). Protective stream buffers applied during herbicide spraying operations are identified in the DEIS, Chapter 1, page 22, Plantation Maintenance and Release section.

86-9 Alternatives 6, 8, and 9 do not include any harvest within buffer strips. Mitigation is described in DEIS, Chapter 1. See response to comment 5-3.

86-10 See response to comment 15-6.



Reply to: 1950

Date: August 20, 1982

Mr. James E. Hart, District Manager
Roseburg District Office
777 N.W. Garden Valley Blvd.
Roseburg, OR 97470

Dear Mr. Hart:

We appreciate this opportunity to comment on the Roseburg Timber Management Draft Environmental Impact Statement. The Umpqua National Forest and Roseburg District are linked by several mutual management concerns and the opportunity to address them. There is also a shared opportunity to be responsive to the public in the management of resources which seek habitat rather than heed administrative boundaries. Significant among these are elk and northern spotted owl, the latter being inextricably linked to old-growth forests.

We are concerned that, though there has been much coordination between Forest and Bureau of Land Management Roseburg District personnel, the proposed action does not reflect this coordination or recognize that certain decisions about District management affect resource management on the Umpqua National Forest.

The number of northern spotted owl pairs recommended for testing in the Umpqua National Forest planning process is based on the Oregon Interagency Spotted Owl Management Plan. Roseburg's proposal to not manage in accordance with recommendations of that plan may have implications on the number recommended for the Umpqua.

90-1

90-2

Similarly, the District's planned reduction in elk habitat could place a burden on National Forest habitat resources. We would like to have these implications considered in your decision.

We also have an interest in methods of analysis you have used which may be applicable to National Forests and add consistency to our planning. Of particular interest are estimation techniques used in assessing water resource effects and your rationale linking mitigation provisions of the several alternatives and Federal law.



FS-6200-11 (8-80)

Mr. James E. Hart

2

Another area of concern is the timber growth prediction attributed to fertilization as it may be interpreted to apply on National Forest lands. Although we agree that this practice can increase yields we have little information on response from the Umpqua National Forest. Umpqua yield tables, therefore, are necessarily more conservative.

We look forward to continued close cooperation with the Roseburg District in formulating the Umpqua Forest plan. Together, the two plans will provide the major thrust for Federal land management in the next decade in Douglas County.

Sincerely,

Jeff M. Sirmion
JEFF M. SIRMION
Regional Forester

INDUSTRIAL FORESTRY ASSOCIATION

SERVING FOREST OWNERS, LOGGERS, WOOD USERS
THROUGHOUT THE DOUGLAS FIR REGION

2680 NO. PACIFIC HIGHWAY
MEDFORD, OREGON 97501

Telephone:
773-5129



August 23, 1982

Response to comments in Letter 90.

90-1 The text has been revised in the FEIS, Chapter 3, Impacts on Animals section, indicating that if BLM does not manage for the number of pairs allocated to it in the Spotted Owl Management Plan, the unmet portion would revert to the Oregon Endangered Species Task Force to consider possible reapportionment.

90-2 The text has been revised in the FEIS, Chapter 3, Impacts on Animals section.

James E. Hart, District Manager
Bureau of Land Management
777 NW Garden Valley Boulevard
Roseburg, Oregon 97470

Dear Jim,

I am Southwest Oregon District Forester for Industrial Forestry Association located in Medford at 2680 North Pacific Highway. My association represents about 90 timber industry companies in western Oregon and Washington, several of which purchase timber on the Roseburg BLM District.

I would like to thank the BLM for this opportunity to comment publicly on the adequacy of the Roseburg District DEIS. The document is indeed an extensive attempt to predict environmental impacts resulting from the various alternative actions. The interdisciplinary team should be complimented for their tedious efforts.

It is an extensive effort, however, I am concerned as to its' effectiveness as a guide to decision makers. Several areas are unclear, inconsistent or misleading and may confuse decision makers as they attempt to formulate a comprehensive timber management plan which will best address the problems and needs of the Roseburg study area.

91-1

To begin with the analysis of the current situation (Alternative 5) is inadequate. Comparing it with the other seven alternatives is like comparing apples and oranges. Alternative 5 uses the old stand classification acreages and yield data, while the other alternatives use new, updated data. If Alternative 5 were chosen as the basis of the future timber management plan, I would assume you would use the new inventory and yield data, since the old data has now proven to be incorrect. Alternative 5 should be presented in the final EIS using the new inventory and yield data to enable decision makers to realistically compare all eight alternatives. It just possibly might show the Proposed Action Alternative (#4) is actually a proposed decrease in timber productivity for the Roseburg BLM District.

91-2

Another unclear and misleading area of the DEIS occurs on pages 23 and 24. Page 23 indicates the greatest habitat modification will occur under Alternative 5. On page 24, table 1-5 shows Alternative 1 would cause the greatest habitat modification. Table 1-5 also shows Alternative 5 will reduce old growth habitat to a greater extent than Alternative 1, even though Alternative 5 harvests fewer acres than Alternative 1 and produces a lower allowable cut.

91-3 Also in Table 1-5, elk and Spotted Owl populations are expected to decline by the 5th and 10th decades respectively, yet no mention is made of what will happen in the 1st decade, which is what this EIS is supposed to do. Realistically, elk populations will probably increase in the 1st decade and the minimum Spotted Owl populations will not be affected regardless of which alternative is selected for the final plan. This is significant environmental data that a decision maker should be aware of. It should be in the EIS.

91-4 Along those same lines it appears to me there is a general pessimism or negativism toward timber management activities in this DEIS. Positive effects are rarely if ever mentioned, yet they exist just as surely as do the negatives. As an example, on page 84, the statement is made that herbicides used on tall broadleaf species cause long term visual impacts of up to 20 years. No mention is made of the positive effects of the treatment such as habitat creation for cavity dwellers. It is perceived as an eyesore, yet in this same document, decadent, snag riddled, conkey old growth is considered esthetically pleasing. An attempt should be made in the FEIS to present a more balanced view of impacts relating to a proposed action.

91-5 On pages 60, 61, and 62 an attempt is made to describe the economic effects of timber management on local economies. Again, in this DEIS, the data is presented in 1976-1978 dollars. For the life of me I can't understand how we can predict Spotted Owl population levels in the 10th decade, yet we can't see an economic discussion presented in current dollar values. It seems to me more current economic data would be more meaningful to a decision maker. In the FEIS it would be helpful to know if the figures in Table 2-26 (Economic Effects of Fisheries, Hunting, and Recreation) and the summary on page 62 are also in 1976-1978 dollars.

In addition to the above general thoughts, which I presented in oral testimony at the August 18th public hearing, I would like to add the following more specific concerns and recommendations for your consideration in evaluating the adequacy of the DEIS.

1. Alternatives lack a strong linkage to the new policy on BLM O&C lands. Only alternatives 1 and 2 come close to determining harvest based on limited landbase withdrawals for other resources.

91-6 **Recommendations:** All alternatives should be redeveloped based on the new BLM planning criteria. If necessary, a new proposed action should be developed either in the final EIS or a new Draft EIS.

2. Departure alternatives, although actually calculated, were given essentially footnote coverage in the DEIS. NEPA requires the agency to fully evaluate all alternatives even if they violate current law or policy. The description in the EIS that the departure analysis is not "useful enough" is inadequate. It is obvious that significant increases in current and long-term harvest and growth is possible with a departure as compared to the proposed action.

91-7 **Recommendations:** Fully analyze several viable departure alternatives for their socioeconomic and environmental effects in the FEIS.

3. The economic efficiency analysis is insufficient. The benefit cost ratios should be calculated on the basis of a rotation and not simply on the allowable cut effect in a 10-year period. Investments in a future stand are not returns to the current standing inventory, as dictated under the A.C.E. concept. With the same consideration, the soil expectation value is an incorrect measure of the relative worth of a management regime because it ignores the value of the current inventory. The current inventory must be removed prior to initiating future management and as such, the returns from harvesting now must be accounted for in the formula.

91-8 Additionally, soil expectation values only give a relative measure of the effectiveness of various management regimes, but do not give the absolute value of the land. The value of the land is determined solely by what it is worth when sold in the market place. Therefore, S.E.V. is only a measure in rankings. One question we do have is even though there are significantly higher S.E.V. regimes, why was the less efficient one chosen for the preferred alternative?

91-9 The price assumptions are overly optimistic in terms of future timber revenues, while the DEIS assumes an average stumpage price of about \$260/MBF, in reality the current price is about one-half that or \$130/MBF. The trend rates for timber values also appear to be overly optimistic.

91-10 4. The cost factors used in the various forest management scenarios also appear to be (1) either significantly higher than has been recent experience on industry lands, or (2) unsubstantiated.

Recommendation: Completely redo the economic analysis to reflect the true current costs and revenues generated by management and evaluate returns exclusive of the ACE effect.

5. We are extremely concerned at the BLMs proposal to reduce the landbase by some 44,000 acres, increase the management intensity through higher budget dollars, and thereby increase or maintain the harvest level. While we approve strongly of intensive forest management and the leadership the BLM shows in this area, we are concerned about the use of intensive management to trade away acres for unsubstantiated other resource uses. The increase in budgets required to be successful in this program will likely not be there in the future. The BLM, therefore, will have its entire timber program predicated on some very shaky financial assumptions. One solution to the dilemma is to alter the forest management intensity to reflect better budget expectations and make up the loss in production from additional allocations of timberland from nontimber uses.

91-11 **Recommendation:** Reformulate the alternatives into proposed programs which are more in line with realistic budget assumptions, and clearly display what the increases in budgets expected are for each increment of additional allowable harvest.

Sincerely yours,

Richard H. Felgenhauer
Richard H. Felgenhauer
District forester

Response to comments in Letter 91.

91-1 Council on Environmental Quality (CEQ) Regulations (40 CFR 1502.14(d)) require a No Action Alternative to be included in environmental impact analysis.

91-2 The text has been revised in the FEIS, Chapter 1, Comparison of Impacts. Differences relating to the amount of old growth existing at the end of the first decade under Alternatives 1 and 5 are explained in the DEIS, Chapter 3, Table 3-8.

91-3 See response to common issue 1.

91-4 Although positive effects on cavity dweller habitat would result from herbicide treatment to broadleaf species, such treatment would not provide significant wildlife benefits due to the scattered distribution of broadleaf species in the Roseburg District.

91-5 Table 2-26 has been revised in the FEIS to include a footnote which indicates that the estimates of personal earnings reported are adjusted to the average wage and price level which prevailed in Oregon between 1976 and 1978. In order to sum the results of Tables 2-25 and 2-26 (page 62, DEIS) the estimates of personal earning must be in dollars of the same period. The most recent year in which data were available for all resource categories evaluated in the plan was 1978.

91-6 The FEIS includes a new Preferred Alternative (Alternative 9). Also, see response to comment 12-1.

91-7 Refer to Appendix B, Results of Scooping. Also, see response to comment 78-4.

91-8 See response to comment 68-19.

91-9 Average sales value per M bd. ft. for timber sold by the Roseburg District was \$260 in FY 1981 and \$94 in FY 1982. These baselines have been added to Appendix B, Table B-2.

91-10 See response to common issue 5.

91-11 See response to common issue 2.

984 Lincoln
Eugene, Ore. 97401

Roseburg District Manager
Roseburg District Office
777 N.W. Garden Valley Blvd.
Roseburg, Ore. 97470

Dear Sir:

Following are my comments on the Roseburg Timber Management Environmental Impact Statement.

I am continually appalled that the BIM could write an EIS so curiously descriptive and graphic concerning the impacts to wildlife, and yet propose to make those very decisions having the worst effect. The EIS admits that continuing timber management at the proposed level will ruin forest diversity; that elk survival cover will be greatly reduced, leading to a 20% decline in the population; that mortality salvage will eliminate snags; that the preferred alternative will cause a 34% decline in old growth after one decade, and a ridiculous 71% decline after a century; that the Tyee area contains none of the old growth management, et cetera.

It defies comprehension for the Roseburg District to say that the spotted owl is a potential candidate for threatened and endangered status, yet propose an alternative that does not aid its long term chances for survival. Likewise with choosing an alternative that follows the Forestry Plan for Oregon, but does not follow the Oregon Department of Fish and Wildlife recommendations.

Nothing in the O&C Act requires this sort of dominant use. It is especially ridiculous to raise the allowable cut when, due to the deep recession, billions of BIM board feet are sold but not yet cut. Simply selling more will only further

depress an already disastrous market.

When will foresters realize that wildlife and timber management are not separate disciplines; that both must be cared for on the public forest, and that it is not good enough to consign wildlife to the margins of the dominant timber program. The excuse has always been the O&C Act; that because it does not mention wildlife, BIM need not worry about that. That is a wrongful attitude. Forest management is not synonymous with timber management.

The O&C Act does mention watershed management. A major component of watershed management is riparian zone preservation, which fares rather poorly in the preferred alternative. It is the first and second order streams, the beginnings of the major rivers, whose riparian areas are not being protected at all.

The EIS, like many of its ilk, goes into gruesome detail on wildlife impacts, which is laudatory. But it never explains the forestry program in human terms.

It is not necessary to include a detailed and complicated analysis of the allowable cut's derivation. But it is important to explain truthfully how the allowable cut is derived; the use of the allowable cut effect; and the rationale for the allowable cut. None of these things are done. There is no explanation for why the cut goes up so highly in this EIS.

In light of the fact that matters are not settled on Coos Bay, and that a corridor system may be the only viable way to settle the remaining old growth into a workable system, I should think it hasty to espouse an alternative like this one.

Sincerely,

Cameron La Follette

93-1

Response to comments in Letter 93.

93-1 The text has been revised in the FEIS, Appendix C, by the addition of Figure C-2. Also, see response to comment 16-40.



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration

September 17, 1982

94

District Manager
Bureau of Land Management
Department of the Interior
777 NW Garden View
Roseburg Boulevard
Roseburg, Oregon 97470

Dear Sir:

This is in reference to your draft environmental impact statement entitled "Roseburg Timber Management." The enclosed comments from the National Oceanic and Atmospheric Administration are forwarded for your consideration.

Thank you for giving us an opportunity to provide these comments, which we hope will be of assistance to you. We would appreciate receiving four copies of the final environmental impact statement.

Sincerely,

Joyce M. Wood
Director
Office of Ecology and Conservation

Enclosure: Memo from: Dale R. Evans
National Marine Fisheries Service





UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
ENVIRONMENTAL & TECHNICAL SERVICES DIVISION
847 NE 15th AVENUE, THIRD FLOOR
PORTLAND, OREGON 97232
(503) 230 5400

August 26, 1982 F/NWR5:JS

Rec'd 9/6/82
EC:dmw

Memorandum

To : PP/EC - Joyce M. Wood
From : F/NWR5 - Dale R. Evans
Subject: DEIS - Roseburg Timber Management (Bureau of Land Management)

The subject DEIS has been received by the National Marine Fisheries Service for review and comment. The following comments are offered for your consideration.

General Comments

Inadequate attention has been given to the potential fishery impacts arising from timber management practices on lands in the Roseburg District. The document does not spell out the actual impacts which any of the alternatives could have on fish resources.

While the actual miles of streams on the Bureau of Land Management (BLM) administered lands are finite, the potential for negative impact is not confined to streams on BLM land but could encompass the productivity of streams in the entire Umpqua River System.

For example, the deterioration of water quality caused by lack of protection for first and second order streams can severely damage habitat in higher order streams. Silt originating from fragile areas can bury fish spawning grounds far downstream. A total of forty-one percent of the soils of the Roseburg SYUs are classed as Fragile and Problem soils (Table 2-4), capable of adversely affecting fish resources. In other cases, a relatively small appearing slump or debris dam could block access to all existing anadromous fish habitat upstream.

Such potential for widespread detrimental effect from BLM activities to fish habitat is not addressed in the present document.

Specific Comments

94-1 Page 5, paragraph 2, Animals. There is no mention of possible impacts of the proposed action on fish. If the proposed action would increase water yield and sedimentation in municipal watersheds, there must be some impact on fish.

94-2 Pages 24-25, Table 1-5, Summary of Impacts. The table does not include an estimate of impacts on fish habitat.

94-3 Page 26, Federal Agencies. The National Marine Fisheries Service (NMFS) is responsible for oversight and evaluation of activities which may affect marine, estuarine, and anadromous fishery resources. NMFS participates in comprehensive land and water use planning under the terms of the Water Resources Planning Act, the Coastal Zone Management Act, and the National Environmental Policy Act and makes recommendations for maintenance or enhancement of anadromous fishery resources under the terms of the Fish and Wildlife Coordination Act.

94-4 Pages 34-38, Soils. Table 2-4, Fragile and Problem Soils. The table refers to Figure 2-2, General Soils. The colors of the table and the map do not correspond, even considering the corrections from the Errata Sheet. This makes it impossible to compare and interpret the two.

94-5 Page 46, Table 2-11, Salmonid Fish Habitat and Populations. There is no estimate of total actual miles of fish habitat. Some habitat may be utilized by more than one species, either concurrently or at different times of the year.

94-6 Passage for upstream and downstream migration can be an important limiting factor for anadromous fish and is affected by water quality and quantity. Miles of stream used for fish migration and the quality of passage therefore should be evaluated. Impact on fish caused by the proposed action is not quantified.

94-7 Page 77, Fish. While this chapter is entitled "Environmental Consequences," and the section on fish itemizes a number of factors which can affect fish, the consequences of the various alternatives upon fish populations are not discussed.

94-8 We are particularly concerned for the maintenance of the integrity of the buffer strips for streams. We strongly urge incorporation into the proposed action (or into whichever alternative is finally adopted) features which will provide for protection and enhancement of fish resources of the area.

Special attention should be given to bank protection on first and second order as well as higher order streams to prevent sedimentation downstream, and to protection for all Class I streams against sedimentation and increased temperatures.

Inasmuch as future declines in timber supplies are predicted (page 61), it would seem prudent to protect alternative economic resources as much as possible.



Response to comments in Letter 94.

94-1 See response to comment 74-3.

94-2 See response to comment 74-3.

94-3 The text has been revised in the FEIS, Chapter 1, Interrelationships section.

94-4 The text has been revised in the FEIS, Chapter 2.

94-5 The total miles of salmonid habitat are indicated in the DEIS, Chapter 3, page 77. It can also be determined from Chapter 2, Table 2-11, by adding the miles of BLM habitat for resident trout.

94-6 See response to comment 85-4.

94-7 Refer to DEIS, Chapter 3, page 79. Also, see response to comment 74-3.

94-8 Refer to DEIS, Appendix C, Table C-4.

LIST OF AGENCIES, ORGANIZATIONS AND PERSONS TO WHOM COPIES OF THE STATEMENT ARE SENT

Comments on the draft environmental statement were requested from the following:

Federal Agencies

Advisory Council on Historic Preservation
 Department of Agriculture
 Forest Service
 Soil Conservation Service
 Department of Commerce
 National Marine Fisheries Service
 Department of Defense
 U.S. Army Corps of Engineers
 Department of Energy
 Region X
 Department of the Interior
 Fish and Wildlife Service
 Geological Survey
 National Park Service
 Bureau of Mines
 Bureau of Reclamation
 Small Business Administration
 Environmental Protection Agency

State and Local Government

Oregon State Clearinghouse
 Oregon Regional Clearinghouses
 Lane Council of Governments
 Umpqua Regional Council of Governments
 Rogue Valley Council of Governments
 Oregon State Historic Preservation Officer
 Boards of County Commissioners
 Douglas County

Interest Groups (partial listing)

American Forest Institute
 Associated Oregon Industries
 Association of O&C Counties
 Cascade Holistic Economic Consultants
 Friends of the Earth
 Industrial Forestry Association
 Izaak Walton League
 Natural Resource Defense Council
 National Wildlife Federation
 Northwest Environmental Defense Center
 North West Timber Association
 Oregon Environmental Council
 Oregon Natural Heritage Program
 Oregon Student Public Interest Research Group
 Oregon Wilderness Coalition
 Sierra Club
 Southern Oregon Citizens Against Toxic Sprays
 Southern Oregon Resource Alliance
 Southern Oregon Timber Industries Association
 The Wilderness Society
 Western Forest Industries Association
 Wildlife Management Institute

Copies of this environmental impact statement will be available for public inspection at the following BLM offices:

Washington Office of Public Affairs
 18th and C Streets
 Washington, D.C. 20240
 Phone (202) 343-5717

Roseburg District Office
 777 NW Garden Valley Blvd.
 Roseburg, Oregon 97470
 Phone (503) 672-4491

Oregon State Public Affairs Office
 825 N.E. Multnomah
 P.O. Box 2965
 Portland, Oregon 97208
 Phone (503) 231-6277

Reading copies will be placed in the following libraries: Portland State University, Portland; Oregon State University, Corvallis; University of Oregon, Eugene; Lane Community College, Eugene; and Umpqua Community College, Roseburg; and public libraries in Salem, Canyonville, Drain, Glendale, Myrtle Creek, Riddle, Roseburg, Winston and Yoncalla.

Copies of the final EIS are sent to each person, organization or agency commenting on or receiving copies of the draft document.

LIST OF PREPARERS

While individuals have primary responsibility for preparing sections of an EIS, the document is an interdisciplinary team effort. In addition, internal review of the document occurs throughout preparation. Specialists at the District and State Office levels of the Bureau both review the analysis and supply information. Contributions by individual preparers may be subject to revision by other BLM specialists and by management during the internal review process.

Name	Primary Responsibility	Discipline	Related Professional Experience
Dick Bonn	Team Leader, Soils, Human Health	Biologist	4-1/2 years BLM (Environmental Specialist) Portland, Oreg. 11 years SCS 2-1/2 years (Biologist) Watershed & River basin, Columbus, Ohio. 2-1/2 years (Biologist) Watersheds Richmond, VA. 4 years (Biologist & Recreation) Albany, Oreg. 2 years (Soil Conservationist) Harrisburg, Oreg.
D. F. Buck, Jr.	Air, Water, Climate, Geology	Soil Scientist	5 years BLM (Soil Scientist, Environmental Protection Specialist)
L. D. Hamilton	Technical Coordinator/Editor	Geography	11 years (Outdoor Recreation Planner, Environmental Protection Specialist) moved to Colorado, March 1982.
Phillip D. Havens	Fisheries & Wildlife	Wildlife Biology	18 years (Wildlife Biologist)
Jeanne Johnson	Editorial Assistant	Administrative Secretary	7 years BLM (Secretary, Editorial Assistant)
R. Michael Martin	Socioeconomics	Economics	6 years (Economist)
Joseph Ross	Recreation, Cultural Resources, Wilderness, Areas of Critical Environmental Concern, Special Areas, Visual Resources and Energy.	Recreation	8 years (Forestry Technician, Biological Information Specialist, Outdoor Recreation Planner)
R. Gregg Simmons	Description of the Proposed Action and Alternatives, Vegetation	Forest Management	8 years BLM (Forester) 5 years Eugene, Oreg. 3 years Portland, Oreg.

Roseburg District Personnel Contributing Substantial Input

Name	Primary Responsibility	Discipline	Related Professional Experience
Robert L. Alverts	Planning coordination, information supply, document review	Forest Management	16 years BLM (Forester, Area Manager, Planning & Environmental Coordination) 7 years Medford 4 years Burns 5 years Roseburg
Stewart H. Avery	Information supply, document review	Forest Engineering	25 years BLM (Forester, District Engineer, Resource Manager, Area Manager) 5 years Medford 20 years Roseburg
Robert W. Bright	Information supply, document review	Forest Management	21 years BLM (Forester, Planning Coordinator, Area Manager) 16 years Roseburg 5 years Susanville
Bennie C. Hobbs	Information supply, document review	Forest Management	13 years BLM (Forester, Timber Manager, Area Manager) 10 years Eugene 3 years Roseburg
Dennis E. Hutchison	Soils, Air, Water information, document review	Resource Management (Soil Science)	14 years (10 SCS, 4 BLM) 8 years Midwest and East 2 years Idaho 4 years Roseburg
Joseph B. Lint	Wildlife information, document review	Wildlife Biology	8 years BLM (Biologist) 4 years Coeur 'd Alene 4 years Roseburg
John R. Norlin	Forestry information, document review	Forest Management	25 years (5 BIA, 20 BLM) Forester, Timber Manager, Realty Spec., Timber Management Spec.) 3 years Midwest 2 years E. Wash. 5 years Tillamook 15 years Roseburg
Franklin M. Oliver	Fisheries information, document review	Fish Biology	18 years (5 years Oregon Department of Fish & Wildlife, 13 years BLM, Fish Biologist) 18 years Roseburg
David R. Palmer	Forestry information, document review	Forest Management	7 years BLM (Forester) 7 years Roseburg
Robert A. Smith	Information supply, document review	Forest Management	32 years BLM (Forest and Range Management, Fire Control, Area Manager) 14 years Alaska 3 years Burns 15 years Roseburg

Appendices

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Appendix A

O&C Forest Resources Policy to be Used in Developing Plans for BLM Administered Forest Lands in Western Oregon

This statement sets forth BLM policy for management of the Revested Oregon and California (O&C) Railroad and reconveyed Coos Bay Wagon Road Grant lands situated in the State of Oregon. It reflects the provisions of the Act of August 28, 1937 (O&C Act), and the effects of other relevant legislation and Executive Orders.

The BLM manages 2.1 million acres of O&C lands in western Oregon. The revenues and employment generated by timber sales, conversion of timber to wood products, and other marketable values derived from these lands significantly affect the State and local economies. It is further recognized that public use of these lands through consumptive and non-consumptive recreation, including sport hunting and sport and commercial harvest of salmon and steelhead produced in streams on the O&C lands, also contributes to the local and State economies. The primary objectives of the management program on the O&C lands are to manage for a high-level and sustained yield output of wood products needed to contribute to the economic stability of the local communities and industries, and to provide for other land uses as established in the O&C Act and other legislation.

The following principles will guide BLM in managing the forest resources on O&C lands:

1. Resource management plans or management framework plans as developed through the land-use planning process shall constitute the primary guides for carrying out legislative mandates and Bureau policies.

2. All O&C land administered by BLM in western Oregon will be classified according to the Timber Production Capability Classification. Lands classified as suitable for timber production shall be managed for timber and wood product production, to the extent possible, under the requirements of law. Lands classified as nonsuitable for timber production shall be allocated to the fullest extent possible to meet the needs for non-timber public land uses. Where nonsuitable lands cannot adequately provide for other uses set forth in the O&C Act and other applicable legislation and Executive Orders, suitable lands may be managed to meet the needs for the following:

- a. Maintenance of water quality in accordance with Federal and State standards. Timber harvesting may be restricted or excluded only in

areas where mitigating measures will not maintain water quality standards.

- b. Protection of wetlands, including riparian zones. Timber harvesting may be restricted or excluded only in areas where mitigating measures will not be effective.

- c. Conservation of specifically identified habitats for federally listed, threatened and endangered species. Timber harvesting may be restricted or excluded only in areas where mitigating measures will not be effective.

- d. Research and development pertinent to the management of the land resources. Timber harvesting may be restricted or excluded only in areas where mitigating measures will not maintain resource values, and research is assessing these values: timber harvesting may be restricted or excluded pending the research conclusions.

- e. Consideration of State goals and objectives concerning State-listed, threatened and endangered species in land-use planning and management. Restrictions may be utilized to achieve the habitat objectives developed from the BLM plans.

- f. Consideration of habitat needs of native species. Restriction of timber harvest may be considered when these habitat needs cannot be met through established timber harvest practices.

- g. Protection of developed high-value recreation areas, including the visual quality of significant scenic areas. Restriction or exclusion of timber harvest may be considered in the protection of established recreation facilities. Timber harvest may be restricted in the protection of scenic areas only where mitigating measures will not prove effective.

3. The allowable cut determination shall be based on a nondeclining harvest level over time. Departures from the nondeclining harvest level may be permitted in either direction. Any increases shall not exceed the long-term sustained yield capacity of the land; decreases shall be economically and/or biologically justified and timed so as to minimize impacts on dependent industries and local economies.

The Seral Stage Distribution Concept

The mid-age and old growth stands remaining today are the result of complex interactions between plants and animals over time. Evidence points towards the simultaneous evolution of these plants and animals. Yet, the exact functioning and purpose of many of these interactions have not yet been studied in depth. For example, the mechanisms for nitrogen fixation have only been identified within the past decade.

Additionally, there are indications that mycorrhizal inoculation by rodents may be critical to plantation establishment and survival in some instances (Franklin et al. 1981). There are many unknowns regarding which portions of this interacting web, if any, must be replicated by management if long-term timber production is to be maintained at high levels. What is known, however, is that the timber management program would liquidate the remaining old growth stands in a relatively short time if unconstrained.

Seed zones are accepted as generally encompassing a geographic area within which the factors affecting reforestation and subsequent growth are relatively homogenous. Mid-age and old-growth timber in areas allocated to long-term timber productivity; habitat for old growth related species, including the northern spotted owl; riparian habitat; and high scenic quality provides adequate coverage of seed zones in the Roseburg District (see Appendix C, Modified Area Control).

For all districts in western Oregon most seed zones where old growth currently exists are adequately covered. Table A-1 and Figure A-1 indicate the seed zones which cover the five western Oregon district boundaries.

Table A-1 Tree Seed Zones by Elevation in Western Oregon

Zone	Elevation	District
053	1,500 - 2,000	Salem
061	1,000 - 1,500	Salem
061	1,500 - 2,000	Salem
061	2,000 - 2,500	Salem
062	500 - 1,000	Coos Bay
062	500 - 1,000	Coos Bay
062	1,000 - 1,500	Eugene
062	1,000 - 1,500	Coos Bay
062	1,500 - 2,000	Coos Bay
071	500 - 1,000	Coos Bay
071	500 - 1,000	Coos Bay
071	1,000 - 1,500	Coos Bay
071	1,000 - 1,500	Coos Bay
071	1,500 - 2,000	Coos Bay
071	1,500 - 2,000	Coos Bay
071	2,000 - 2,500	Coos Bay
072	500 - 1,000	Coos Bay
072	500 - 1,000	Coos Bay
072	1,000 - 1,500	Coos Bay
072	1,000 - 1,500	Coos Bay
072	1,500 - 2,000	Coos Bay
072	1,500 - 2,000	Coos Bay
072	2,000 - 2,500	Coos Bay
072	2,000 - 2,500	Coos Bay
072	2,500 - 3,000	Coos Bay
072	2,500 - 3,000	Coos Bay
251	1,500 - 2,000	Salem
252	500 - 1,000	Coos Bay
252	500 - 1,000	Roseburg
252	500 - 1,000	Eugene
252	1,000 - 1,500	Eugene
252	1,000 - 1,500	Eugene
252	1,000 - 1,500	Roseburg
252	1,500 - 2,000	Salem
270	500 - 1,000	Roseburg
270	1,000 - 1,500	Roseburg
270	1,000 - 1,500	Roseburg
270	1,500 - 2,000	Roseburg
270	2,000 - 2,500	Roseburg
270	2,500 - 3,000	Medford
452	1,500 - 2,000	Salem
452	3,000 - 3,500	Salem
452	3,500 - 4,000	Salem
461	1,000 - 1,500	Salem
461	1,500 - 2,000	Salem
461	2,000 - 2,500	Salem
461	2,500 - 3,000	Salem
461	3,000 - 3,500	Salem
461	3,500 - 4,000	Salem
462	1,500 - 2,000	Salem
481	1,500 - 2,000	Eugene
481	2,000 - 2,500	Eugene
481	2,500 - 3,000	Eugene
491	500 - 1,000	Roseburg
491	1,000 - 1,500	Roseburg
491	1,500 - 2,000	Roseburg
491	2,000 - 2,500	Roseburg
491	2,500 - 3,000	Roseburg
491	3,000 - 3,500	Roseburg
491	3,500 - 4,000	Roseburg
492	1,000 - 1,500	Roseburg
492	1,500 - 2,000	Roseburg
492	2,000 - 2,500	Roseburg
492	2,500 - 3,000	Roseburg
492	3,000 - 3,500	Roseburg
492	3,500 - 4,000	Medford

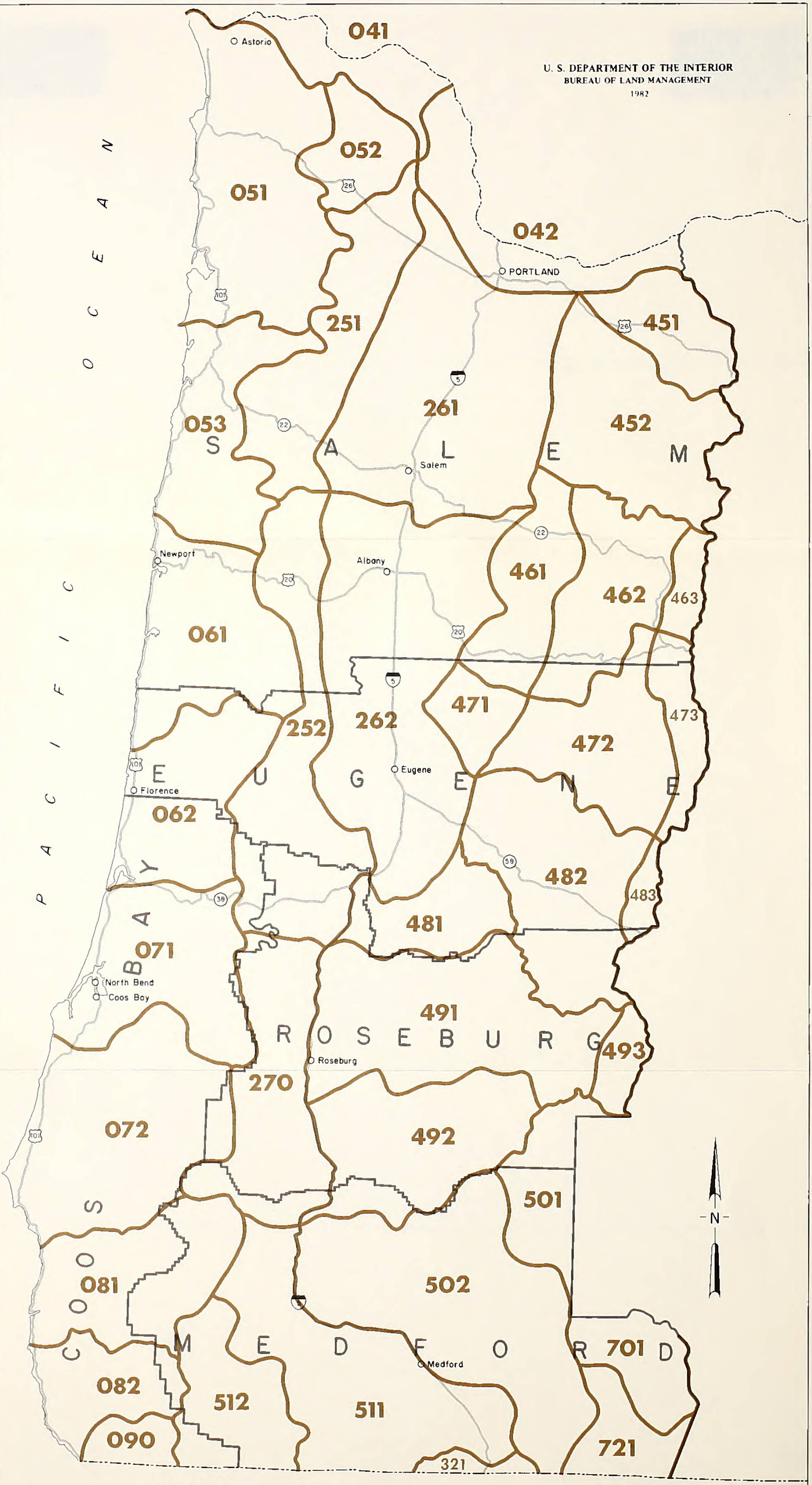


FIGURE A-1

WESTERN OREGON TREE SEED ZONES

Scale 1:1,000,000

LEGEND

- 261 Seed Zones Numbers
- Seed Zones Boundary

Appendix B

Results of Scoping

Scoping Meeting

On October 19, 1981, as part of BLM's land use planning process, a public meeting was held at the Roseburg District Office to discuss important issues and alternatives that should be addressed in the Environmental Impact Statement (EIS) for the Douglas-South Umpqua Timber Management Plan.

Participants in the meeting suggested 19 different alternatives for consideration in the EIS. The alternatives suggested, and BLM's analysis of their usefulness and relevance to the EIS process, are summarized as follows:

1. **Maximum Timber Production.** This alternative would modify land use Alternative "A" as described in the Preferred Land Use Alternative Summary brochure, by providing full timber harvest in riparian areas and reducing visual buffers around recreation areas. It established one end of a range of alternatives for analysis in the EIS.

2. **Maximum Timber Production Without Economic Constraints.** This alternative would modify Alternative 1 by including all intensive timber management practices that are technically feasible, whether or not they were cost effective. Upon analysis, BLM concluded that all technically feasible practices were cost effective and thus were automatically included in Alternative 1.

3. **Preferred Alternative Without Old Growth Habitat.** This would vary from the Preferred by including the old-growth habitat (spotted owl areas, old growth blocks and 80-acre blocks) in the intensive timber management base. This defines an analytically useful and relevant land use allocation alternative between Alternative 1 and the preferred alternative.

4. **Preferred Alternative but Include Spotted Owl Areas in Allowable Cut Computation.** This alternative would not permit, during the plan period (decade), cutting of the spotted owl areas protected in the Preferred; but the allowable cut would be calculated as if that land were available for timber harvest. This would offer little analytical utility as it would simply propose a somewhat faster rate of timber harvest on the preferred land base, varying all impacts that are strictly dependent on the rate of cutting (e.g., economic benefits, erosion and sediment yield).

5. **Review Wildlife Mitigating Measures.** The thrust of this alternative was to obtain a higher timber harvest than the preferred alternative by addition of measures to mitigate impacts on wildlife with less reductions in potential timber harvest. Analysis after the meeting led to the conclusion

that the preferred alternative included all feasible measures that would achieve higher timber harvest and meet the wildlife goals.

6. **Strong Emphasis on Protection of Natural and Cultural Resources.** This would be similar to Alternative "D" in the Preferred Land Use Alternative Summary Brochure, but modified to exclude intensive forest management practices which enhance timber yield. This includes protection of a variety of wildlife habitats, sensitive botanical species, cultural resources, visual resources, research natural areas, riparian areas and undeveloped recreation activities and facilities.

Approximately 263,700¹ acres of commercial forest land would be managed on a 60-year minimum harvest age, although no intensive management practices which enhance timber yield would be applied to harvested areas after planting. Fifteen year spacing between harvest areas would be employed. An additional 127,400 acres of commercial forest land would be withdrawn from the allowable cut base to protect the resources listed above. Harvest from these areas would be allowed only when directly benefitting the protected resources.

7. **Full Ecosystem.** This alternative is intended to emphasize the allocation of land for protection of wildlife habitat diversity and related values. Alternative 6 encompasses this approach.

8. **Maintain Old-Growth Dependent Species and Non-Declining Yield of Resources Other Than Timber.** Alternative 6 basically would achieve this objective.

9. **Limit Timber Management to Existing Developed Land to Maintain Wildlife Habitat and Watershed Protection.** Alternative 6 would also basically achieve this objective.

10. **No Timber Harvest.** This alternative would not in any way meet the primary objective of the timber management plan--providing a sustained timber harvest. In addition, this alternative received only limited support at the public meeting.

11. **The Natural Situation Before BLM Land Management Began.** This is not a realistic alternative as no BLM management could reestablish this situation. In addition, this alternative received only limited support at the public meeting.

12. **Departure From Even Flow.** This suggestion assumed that first-decade departure from even-flow would not cause a subsequent decline below the even-flow level, for either the preferred land base or the land base in Alternative 1. BLM analysis has shown, however, that it is not possible to depart from even-flow in the first

¹ Refinement since the scoping meeting has resulted in the following breakdown for the constrained timber production base:

decade without causing a subsequent decline below the even-flow level. Thus, the alternative is not viable.

VRM	(MHA - 130)	49,376
Wildlife	(MHA - 60)	107,180
Wildlife	(MHA - 250)	83,211
Wildlife	(MHA - 350)	22,669

13. Lower Average Minimum Harvest Size. This alternative is identical to the preferred alternative except that minimum harvest size and corresponding minimum harvest age would be reduced. The minimum average tree diameter in stands selected for final harvest would be 11 inches diameter breast height (dbh) compared to 14 inches dbh under the preferred alternative. The equivalent minimum harvest age would be 40 years instead of 50 years as in the preferred alternative. This alternative is considered to be analytically useful to the decisionmaker.

14. A Constant Budget. This alternative would be expected to show whether, in the long run, a constant budget would support the increasing use of intensive management practices planned in the Preferred Alternative. For the other alternatives, a constant budget is assumed for the short term (10 year), but analysis of the long-run implications would require making economic assumptions extended over a time span of at least 60 years (the time by which old growth on lands in intensive management would be harvested). Such long-term economic forecasts would be too conjectural to be useful to the decisionmaker; however, a constant dollar long-term budget will be displayed for the preferred alternative.

15. Use of Different Computer Model for Allowable Cut Computation. This is a relevant suggestion which will be investigated for application to the next cycle of allowable cut determinations, which will begin in several years. At this stage of the current process it is not practical for BLM to obtain a different computer program for allowable cut computations.

16. Economic Optimum for Timber Management. This suggestion focused on management like that of an industrial forest, with a goal of at least 7 percent real return on investment. The Bureau's planning process is not oriented to defining such an alternative, but the revenues and costs of timber management for the preferred alternative will be defined in the EIS.

17. Departure from Even-Flow on the Preferred Land Base, with a Constant Budget. This would combine Alternatives 12 and 14, which as previously stated, are not viable or practical.

18. No Fertilization, No Herbicides, No Credit for Genetically Improved Trees. This alternative would exclude the use of both fertilizer and herbicides for timber management. It would provide for continued planting of genetically

improved trees, but the allowable cut computation would not take credit for expected growth increases. It is a relevant and useful alternative to analyze.

19. No Fertilization, No Credit for Genetically Improved Trees. This alternative would differ from Alternative 18 only in one dimension. It would not be analytically useful to include it in addition to No. 18.

The above analysis concludes that five alternatives suggested at the meeting were relevant and useful to analyze in addition to the preferred alternative and the No Action (continue existing management) Alternative. These seven alternatives display five land use bases; however, only one (Alternative 6) represents a land use allocation with an allowable cut level lower than the preferred alternative. For comparative purposes, another land use allocation alternative, with an allowable cut level below the preferred alternative, should be included. Alternative C, described in the Preferred Land Use Alternative Summary Brochure, fills this need.

The preceding summary, although organized differently, was discussed with the Roseburg District Multiple Use Advisory Council on October 20, 1981. The Council concurred with BLM's review of the alternatives and the recommended number for analysis in the EIS. There was a suggestion to include an additional alternative that would allocate only the best timber producing lands to intensive timber management, leaving the remainder to provide benefits for wildlife, water quality, visual quality and other resources. This approach, although not supported by the majority of the Council, was later analyzed by BLM. In the development of the preferred alternative, this approach had already been adopted to the extent possible. Its utility for meeting wildlife and related objectives is quite limited, however, as the most productive timber land also has the highest productivity for certain wildlife species.

Based on the public comments, BLM analysis and District Advisory Council recommendations, we have concluded the EIS should analyze the following alternatives:

1. Maximum Timber Production (Discussion Item 1)
2. Emphasis On Timber Production (Discussion Item 3)
3. Lower Minimum Harvest Size (Discussion Item 13)
4. Proposed Action
5. No Action
6. Minimum Necessary Habitat Diversity (Alternative C in Summary Brochure)
7. No Herbicides, Fertilizer or Allowable Cut Effect for Genetics (Discussion Item 18)
8. Emphasis on Protection of Natural and Cultural Resources (Discussion Item 6)

The public, through the EIS scoping, did an excellent job of defining a number of issues they believed the EIS should address.

Analysis showed that most of the issues fell within the broad range of issues listed in the handout used to begin the discussion at the EIS scoping meeting. Following is a revised list of issues to be discussed in the EIS. These are environmental values which could be significantly impacted by the timber management proposal or other alternatives as seen by the public:

Air Quality - smoke management

Soils - fragile areas; erosion potential

Water - quality and quantity; impacts from intensive management practices; municipal watersheds; rural and domestic watersheds; impact of adjoining landowners.

Vegetation - threatened and endangered species, consistency with Endangered Species Act; riparian, consequences of different protection levels; old growth, amount and distribution; consequences of herbicide use compared with other vegetation management alternatives.

Fish and Wildlife - threatened and endangered species, consistency with Endangered Species Act; habitat diversity, impacts of intensive management practices, difficulties/opportunities in mixed land pattern, consequences of different minimum harvest ages; nongame species, species list, abundance, distribution, snag retention policy by alternative; big game species and anadromous fish, impacts of roads, impacts of cover removal, impacts of intensive management practices; northern spotted owls, decadal population levels, possible listing as threatened/endangered species, impacts of intensive management practices; schedule of mitigating or enhancing practices; consideration of non-suitable timberland for allocation to wildlife; corridors, objectives, benefits, consequences.

Social Conditions - consideration of adjoining landowners.

Economic Conditions - public revenue; personal income; employment; dependent communities; funding mechanisms; benefit/cost relationships; opportunity costs of management strategies.

Recreation - economic basis for recreation opportunity, including hunting and fishing.

Visual Resources - difficulties/opportunities in mixed land pattern; consideration of adjoining landowners.

Cultural Resources - protection of sites

Human Health - impacts of herbicides

Areas of Critical Environmental Concern (ACECs)

Intensive Forest Management Practices - genetic tree improvement; use of different silvicultural systems; consideration of non-suitable forestland for other uses; volume contribution of intensive practices; limitations on size and timing of clearcuts; description of current intensive practices and proposed practices; description of allowable cut calculations; display of yield equations.

Several topics were surfaced as issues for discussion. Although monitoring was suggested as an issue, it is not practical to develop a realistic monitoring plan for each alternative in the EIS. A full monitoring plan will be developed and included as an appendix to the decision document to be prepared after completion of the EIS.

Some additional aspects of economic analysis were suggested. It is felt that the topic list under economics is a broad framework and other items suggested as economic issues are encompassed within this framework.

Near the end of the meeting, the audience was asked for its preference on meetings which could be held during the public comment period on the draft EIS. An unstructured public meeting and/or a formal hearing were offered for discussion. The response favored both kinds of sessions, although opinions were mixed on the issue. A portion of the group preferred no meetings at all, remarking that written comments should be more than adequate.

Scoping Correspondence

Subsequent to the discussion of alternatives with the Roseburg District Multiple Use Advisory Council, two letters were received. One letter suggested an alternative which assumes the average management intensity and departs above the long-run sustained yield (LRSY). Although the LRSY would be substantially lower than for other alternatives, there would be surplus old growth volume permitting harvest above LRSY. Under the intensity of management in the preferred alternative there would be no available surplus volume. Surplus volume may be created by using the above suggested assumptions which constrain the sustainable harvest level. Including an alternative in the EIS to "create" surplus inventory in such a way was not considered useful enough analytically, or to the decisionmaker, to warrant the resultant increased complexity of the EIS.

The other letter proposed a departure alternative that would increase the annual sale program in the first two or three decades after which the harvest level would be allowed to drop by no more than 5 percent below the even-flow level. It suggested that this analysis be applied to the maximum timber land base (Alternative 1), the maximum timber base with provisions for spotted owls (Alternative 2) and the preferred alternative land use allocation (Alternative 4).

Although it is interesting to analyze the effects of these three alternatives on harvest levels, inclusion of them as full alternatives in the EIS would make the EIS very cumbersome and add little dimension to the analysis of impacts other than socioeconomic impacts. Accordingly, they are not included in the EIS, but the resultant harvest levels have been computed. The annual timber sale programs (using a two decade increase with a 5 percent decline below the evenflow level in succeeding decades) are shown below in million board feet:

Decade	Alt. 1	Alt. 2	Alt. 4
1	329	303	283
2	329	303	283
3+	274	254	237

Economic Efficiency Discussion

During the EIS scoping process four economic analyses were requested by members of the public. The DEIS presented four different looks at the Original Proposed Action (Alt. 4) from an economic perspective. In response to comments received, these analyses are expanded where clarity was lacking in the DEIS and abbreviated where a summary of findings would suffice. The substantive change is to supplement projections of growth rates in the value of timber adjusted for inflation with two baseline price levels. The average sales value of timber on the Roseburg District in Fiscal Year 1981 (FY 81) was \$260 per M bd. ft. The average value for fiscal year 1982 was \$94 per M bd. ft.

Economic Efficiency of the Timber Management Program in the New Preferred Alternative (Alt. 9).

The timber management programs in both the Original Proposed Action and the Preferred Alternative would yield \$6.72 in timber sale receipts for every dollar of costs at the FY 81 sales value of \$260 per M bd. ft. Each program would yield \$2.43 in timber sale receipts for each dollar spent at the FY 82 sales value of \$94 per M bd. ft. Table B-1 identifies for Alternatives 4 and 9 the annualized costs of major program elements for fiscal years 1984-93. The district's proposed budget for FY 83 is displayed for reference.

Recognize two important facts when comparing budgets in the alternatives with dollars programmed for FY 83. Since BLM has accepted responsibility for prescribed burning on the district lands, fire management costs will increase substantially (with any alternative) in the new plan over the amount budgeted for FY 83. Similarly, timber management costs rise beginning in FY 84 even if programmed output is held constant (Alternative 5). This reflects the fact that the district in 1984 would have a larger percentage of its land base receiving more levels of management than it did in 1972. Determining allowable cut levels decade by decade causes discrete jumps in

management requirements to occur with each new allowable cut declaration. If the FY 83 budget is maintained for the decade, the sustainable output is estimated to be 184 MM bd. ft. per year.

Economic Efficiency of the Forest Management Practices in the New Preferred Alternative (Alt. 9).

Commercial forest land in the Roseburg District is managed under the principle of sustained yield. The thrust of the district's forestry program is to achieve economic and silvicultural efficiency and environmental protection consistent with a high level of annual or regular periodic output of timber. The district has developed a forestry program for its Management Framework Plan (MFP). Among other goals, the selected forestry program targets a package of management practices which, ultimately, would be applied to most acres on the district's commercial forest land. Practices chosen by the district include tree improvement through genetic selection, spacing management (precommercial and commercial thinning) and fertilization. This was the set of practices which the district found to be technically and environmentally feasible. This section contrasts the economic payoff of the complement of practices adopted in the Preferred Alternative with other possible management combinations.

Research has established that, at the margin, each of these practices yields a favorable ratio of discounted dollar benefits to discounted dollar costs when applied to forests which are managed under sustained yield and have an abundance of mature timber (allowable cut effect; see Beuter and Handy 1974 and Hoyer 1975). Increasingly, as the ratio of mature to immature timber declines,

Table B-1 Cost of Forest Management in the New Preferred Alternative (Alt. 9) and Original Proposed Action (Alt. 4).

Major Program Area Affecting Timber Harvest, Reforestation and Growth	Annual Cost in Thousands of Dollars		
	Alt. 4 OPA	Alt. 9 NPA	FY 1983
Transportation Systems ¹	\$1,696.6	\$1,683.0	\$1,134.9
Timber Management	7,174.8	7,120.9	5,176.7
Fire Management ²	529.4	525.1	183.3
Wildlife	128.0	128.0	110.0
Soil/Air/Water	100.0	100.0	94.0
Total	\$9,628.8	\$9,557.0	\$6,698.9

¹ This category does not include funding for bridges, road and aggregate production projects handled through the Federal Highway Administration. Funding for these projects is held at the State Office. An estimated \$500,000 is needed for these construction projects.

² Program areas directly related to reforestation and growth.

the significance of an allowable cut effect dwindles. The district's target is a package of practices which is economically efficient both now and in future decades where there is no allowable cut effect (as early as the fifth decade under the Alternatives 1 through 5 and 9). The district analyzed packages of practices by soil expectation value per acre, where soil expectation value is defined to be the value today of initiating a management program on a nonstocked acre and maintaining that program throughout the future. Soil expectation values net discounted dollar costs from discounted dollar returns. For comparability, each complement of practices is applied to average site conditions on the Roseburg District (the Bureau's allowable cut modeling is based on the average site conditions in each sustained yield unit). Soil expectation values are ranked using discount factors net of inflation of 4 percent, 7.625 percent and 10 percent per year. The 4 percent rate is the factor by which the U.S. Forest Service discounts future returns and costs of forest management to determine an equivalent value in today's dollars. Their analysts argue that a 4 percent return net of inflation is comparable to the yield on new long-term investments in the private sector (Row et al. 1981). They also argue that the value of timber will appreciate 1.65 percent per year faster than general inflation for 50 years (Haynes et al. 1980).

Table B-2 summarizes the district's findings. Arrayed are packages of practices which maximize soil expectation value at various discount rates and possible levels of price appreciation.

Table B-2 Package of Practices Which Maximizes the Soil Expectation Value of Roseburg District Acres Reforested 1984-1993 at Various Discount Rates and Levels of Price Appreciation

Discount Rate	4%	7.625%	10%
Increase in the Value of Timber			
1981 Price level of \$260/M bd. ft.	Plant Improved Stock, Final Harvest	Plant Improved Stock, Final Harvest	Plant Improved Stock, Final Harvest
1.65 Annual Price Appreciation 1981-2030	Plant Improved Stock, Precommercial Thin, Fertilize, Final Harvest	Plant Improved Stock, Final Harvest	Plant Improved Stock, Final Harvest
1.65 Annual Price Appreciation 1981 Forward	Plant Improved Stock, Precommercial Thin, Fertilize, Commercial Thin, Final Harvest	Plant Improved Stock, Precommercial Thin, Fertilize, Commercial Thin, Final Harvest	Plant Improved Stock, Precommercial Thin, Fertilize, Final Harvest

Budget and Revenue Implications of the New Preferred Alternative (Alt. 9).

When measured in constant dollars, the budget requirements of the Preferred Alternative increase through the first four decades and then steadily decline in the fifth through 14th decades (Table B-3). The trend in revenues is tied to both the long-term changes in the value of timber and the type of timber BLM will offer in the future. Today, in second-growth management, log values and logging costs are sensitive to the average diameter and volume harvested per acre (Sessions 1979). Each of the alternatives yields a diameter size class to harvest acres to decade relationship. Table B-3 reports prospective revenues by decade for three possible combinations of base price and appreciation in the value of timber (adjusted for inflation). The table addresses questions raised by members of the public in the EIS scoping process. Some participants felt that the costs of the timber management program in future decades may well exceed revenues. The column in Table B-3 labeled net return indicates that total revenues of the Preferred Alternative will exceed total costs in future decades at \$260/M bd. ft. and where timber values are increasing. The revenues would be the amounts distributed to counties and the federal treasury.

Table B-3 Decadal Budget Requirements and Prospective Revenues of the New Preferred Alternative (Alt. 9)
(millions of 1980 dollars)

Decade	Budget Requirements	Revenues at \$94/MBF ¹	Revenues at \$260/MBF ¹	Revenues @ 1.65% Annual Increase in Timber Values	Net Return at \$94/MBF	Net Return at \$260/MBF	Net Return @ 1.65% Annual Increase in Timber Values
				1980-2030			1980-2030
1	95.60	232.18	642.20	723.84	136.58	546.60	628.24
2	87.04	221.78	613.43	820.26	134.74	526.39	733.21
3	101.19	204.50	565.65	897.33	103.31	464.46	796.14
4	109.06	173.75	480.60	929.37	64.69	371.54	820.31
5	94.80	72.87	201.55	699.83	-21.93	106.75	605.03
6	86.13	84.44	233.56	730.39	-1.69	147.43	644.25
7	90.01	70.55	195.14	719.18	-19.46	105.13	629.17
8	89.33	72.04	199.25	723.05	-17.29	109.93	633.72
9	84.99	68.44	189.32	698.44	-16.55	104.32	613.45
10	83.62	71.87	198.78	729.10	-11.76	115.15	645.47
11	83.39	82.54	228.31	789.51	-0.85	144.91	706.11
12	79.17	90.28	249.71	828.39	11.11	170.54	749.22
13	75.98	99.37	274.85	885.13	23.39	198.87	809.15
14	69.25	109.77	303.61	942.37	40.52	234.36	873.12

¹Revenues per M bd. ft. are adjusted by the average diameter of harvest and the average volume per acre and based on current experience and utilization standards.

Appendix C

Development of the Proposed Action and Alternatives

Defining the proposed action is the last phase of the planning process prior to preparation of the EIS. Alternatives to the proposed action are identified during the scoping phase of the environmental analysis process. Each alternative analyzed in this EIS contains a mix of variables encompassing a range of choices for decisionmakers as required by the CEQ Regulations (40 CFR 1502.2 (2)).

In determination of a sustained yield allowable cut, the primary variables are land classification, acres allocated to timber production and enhancement of growth assumed from specific development practices or treatments. Following in the order of occurrence are brief descriptions of the inventories and processes employed to determine the allowable cut level for the proposed action and each alternative.

Land Classification and Inventory Timber Production Capability Classification

The Timber Production Capability Classification (TPCC) is an intensive inventory process initiated in 1972 to categorize all public land administered by BLM in western Oregon based upon the land's physical and biological capacity to produce timber. TPCC was conducted in accordance with Oregon Manual Supplement 5250.

The TPCC identified 402,000 acres of commercial forest land which could be managed on a sustained yield basis. Approximately 10,900 acres of the commercial forest land were determined to be incapable of undergoing harvest without significant site degradation. These lands, excluded from the timber production base, were placed in this category when it was judged that economically reasonable technology was not available to mitigate such degradation. The remainder of the SYUs' 21,900 acres was determined to be non-forest or non-commercial forest. If new data become available from intensive on-site analysis or improvements occur in technology, the classifications may be altered.

Operations Inventory

For BLM to carry out the timber management program effectively, specific information as to the location and current condition of the various forest types within the land base must be available to the managers. This is accomplished through the Operations Inventory (OI) in accordance with procedures contained in the Operations Inventory Handbook (STORMS).

The OI is an intensive inventory providing forest type maps which show the location and classification of each homogeneous forest type island. OI record cards list acreage, silvicultural needs and opportunities for application of forest management practices on each type island. Operations Inventory thus provides a basis for establishing priorities for treatment based on stand conditions and productivity.

1978 Forest Reinventory

A reinventory of commercial forest land in the SYUs was completed in 1978 employing procedures for extensive inventory jointly developed by the USFS and BLM (USDA, FS 1976). The reinventory uses the same basic inventory design as was used for determination of the present allowable cut, but with further refinement to include stratification of commercial forest land based on information obtained from the OI and TPCC. Statistical analysis indicates the sample mean volume per acre in the Roseburg SYUs is within 8 percent of the true mean volume per acre at one standard deviation.

The reinventory indicates a forest distribution as displayed in Table C-1. Age classes range from non-stocked, where reproduction has not been established, to 500 years.

Table C-1 Existing Acres by Age Class on All Forest Lands

Age Class	Acres	Age Class	Acres
Non-stocked	7,403	210	5,849
1-5	26,740	220	5,649
10	40,853	230	25,085
20	36,568	250	12,291
30	13,852	260	4,348
40	5,973	270	1,504
50	9,065	280	2,294
60	11,319	290	1,301
70	8,959	300	13,799
80	10,931	310	6,882
90	11,741	320	2,294
100	13,282	340	2,294
110	16,879	350	2,294
120	20,008	380	4,588
130	3,595	390	2,294
140	3,595	400	2,294
150	10,545	410	2,294
160	5,616	470	2,294
170	6,197	490	742
180	21,947	500	6,882
190	8,305		
200	3,592	Total	404,236

Other Resource Inventories

Inventories were conducted to identify and categorize specific capability and potential of resources other than timber. Recreation planners applied the BLM's Recreation Information System, an inventory approach for determining inherent potential of the land to support various recreation activities. Visual resource specialists inventoried and classified the SYUs for visual and esthetic considerations. A review and compilation of known cultural resource data (Class I cultural resource inventory) has been completed. Wildlife biologists inventoried northern spotted owl and bald eagle nest sites. Fisheries biologists conducted surveys of streams within the district. Botanical surveys for threatened and endangered plants were initiated for the Roseburg District in September 1978 and are updated yearly. A district-wide soil inventory was completed by Wert et al. 1977 (see References Cited).

Criteria for Selecting the Original Proposed Action (Alternative 4)

The following criteria were used by the District Manager in developing the Original Proposed Action:

- Meet the long-term objective to attain a high level of sustained yield timber production to satisfy regional and national needs.
- Minimize soil loss caused by both management activities and uncontrolled activities (e.g., off-road vehicles).
- Contribute to the improvement or maintenance of water quality in streams, rivers and municipal watersheds, compared to current conditions.
- Minimize sediment reaching the stream and water temperature changes that occur as a result of management activities.
- Minimize impacts on air quality in residential areas.
- Provide for developed and dispersed recreational opportunities to meet demands related to BLM-administered lands.
- Provide for maintaining the visual quality of the forest landscape in areas of high sensitivity.
- Protect or improve and develop fish spawning, rearing and migration habitat.
- Protect important wildlife habitat.
- Protect or enhance habitat of threatened or endangered plant and animal species.
- Provide for scientific and educational study through such programs as Research Natural Areas.

- Allow minerals exploration and development while protecting other resource values.
- Allow adequate land allocations for communication sites, access development and designation of right-of-way corridors while protecting other resource values.
- Provide local economic stability through high levels of local employment and personal earnings which are dependent on raw materials, recreation and other use opportunities available on lands administered by BLM.
- Provide for a high level of contribution to local public revenues from resources and activities available on public lands.
- Demonstrate consistency with State planning goals (Land Conservation and Development Commission), acknowledged local comprehensive plans, and officially approved local resource related plans, programs and policies.
- Demonstrate consistency with other Federal resource-related plans, programs, and policies. (Provide coordinated approach to regional issues and projects or proposals crossing administrative lines.)

Land Use Allocation

During the development of the proposed land use allocations, broad land use alternatives (MFP Alternatives) were identified and reviewed by the District to assess their effects. These MFP alternatives were circulated for public review and comment in 1981. Scoping (see Appendix B) of the EIS led to the conclusion that four of these land use allocation alternatives (some slightly modified) were important enough to analyze in depth. The resulting land use allocations by alternative (Table C-2) were adapted from those alternatives. Alternatives 1, 4, 6 and 8 of the draft EIS were adapted from these alternatives.

Resource protection varies by alternative relative to the mixture of land use allocations and management features prescribed. Table C-3 shows acreage allocations, by resource, of the MFP withdrawals and constrained timber production bases. Table C-4 identifies proposed management features applied during management of the timber producing lands relative to the level of protection provided by each alternative.

When final MFP timber management decisions are made, they will form the management prescriptions. Similarly, actions for other resources, e.g., habitat management plans, will be within the MFP guidelines.

Table C-2 Land Use Allocation Proposed for the EIS Alternatives (Acres)

	Alt. 1 Max. Tbr.	Alt. 2 Emp. Tbr.	Alt. 3 Lo MHS	Alt. 4 OPA	Alt. 5 ¹ No Action	Alt. 6 HD	Alt. 7 No Herb.	Alt. 8 Full Eco.	Alt. 9 NPA
No Planned Timber Harvest									
Non-Commercial Forest Land	2,259	2,259	2,259	2,259	14,304	2,259	2,259	2,259	2,259
Non-Forest Lands	19,660	19,660	19,660	19,660	18,204	19,660	19,660	19,660	19,660
Fragile Site Withdrawals	2,614	2,614	2,614	2,614	0	2,614	2,614	2,614	2,614
Reforestation Withdrawals	8,293	8,293	8,293	8,293	0	8,293	80,421	8,293	8,293
MFP Withdrawals ²	4,448	5,704	5,704	5,704	404	48,790	5,704	128,634	23,565
Sub-total	37,274	38,530	38,530	38,530	32,912	81,616	110,658	161,460	56,391
Planned Timber Harvest									
Intensive Base	386,622	360,580	333,319	333,319	377,098	222,357	261,191	0	331,637
Constrained Base									
VRM	0	3,682	2,646	2,646	5,812	31,345	2,646	49,376	2,658
Wildlife	0	21,104	49,401	49,401	8,074	88,579	49,401	213,060	33,210
Sub-total	386,622	385,366	385,366	385,366	390,984	342,281	313,238	262,436	367,505
Total SYUs Acres	423,896	423,896	423,896	423,896	423,896	423,896	423,896	423,896	423,896

¹ Land use allocations for Alternative 5 (No Action) resulted from the land classification instructions used in the 1970 planning process. For example, fragile sites and reforestation withdrawal are contained in the non-commercial forest land category.

² These are commercial forest lands withdrawn from the timber production base for other resource considerations. See Table C-3 for the identified resource and acres allocated.

Table C-3 Acreage Allocation by Resource

Resource Considerations in Acres *	Alt. 1 Max.Tbr.	Alt. 2 Emp.Tbr.	Alt. 3 Lo MHS	Alt. 4 OPA	Alt. 5 No Action	Alt. 6 HD	Alt. 7 No Herb.	Alt. 8 Full Eco.	Alt. 9 NPA
MFP WITHDRAWALS									
Botanical	611	611	611	611	0	570	611	570	611
Cultural	508	508	508	508	0	508	508	508	508
Recreation ¹	502	1,185	1,185	1,185	404	2,773	1,185	4,615	1,185
Wildlife:									
Bald Eagle	2,912	2,912	2,912	2,912	0	2,769	2,912	0	2,699
Golden Eagles & Raptors	0	640	640	640	0	1,280	640	2,560	640
Old Growth Blocks	0	0	0	0	0	21,422	0	40,098	0
Riparian Areas	0	0	0	0	0	26,383	0	90,707	18,332
VRM II	0	0	0	0	0	0	0	0	0
CONSTRAINED TIMBER PRODUCTION BASE									
Visual Resource Management	0	8,383	8,383	8,383	5,812	45,703	8,383	90,703	8,383
Wildlife:									
Bald Eagle	0	0	0	0	0	0	0	8,769	0
Northern Spotted Owl	0	0	19,826	19,826	0	27,407	19,826	54,940	20,321
Old Growth Blocks	0	0	14,700	14,700	0	0	14,700	0	16,780
80 Acre Blocks	0	0	10,582	10,582	0	67,727	10,582	102,466	11,370
Osprey	0	3,445	3,445	3,445	0	5,273	3,445	10,430	3,058
Riparian Areas	0	18,332	18,332	18,332	8,074	0	18,332	0	0

* Acres are not additive due to overlap.

¹ Includes developed sites, recreation facilities, research natural areas, outstanding natural areas and in Alternatives 6 and 8 sites pending suitability studies.

Table C-4 Management Features

Resource Feature

WILDLIFE	Alt.1 Max. Tbr.	Alt.2 Emp. Tbr.	Alt.3 Lo MHS	Alt.4 OPA	Alt.5 No Action	Alt.6 HD	Alt.7 No Herb.	Alt.8 Full Eco.	Alt. 9 NPA
Riparian Zones	No timber harvest restrictions	No restriction on 1st and 2nd order streams. Approximately 18,300 acres along 3rd order and larger streams would be managed under modified area control. Harvest is expected to occur on an estimated 6% of this area, of which 11% would be clearcut.	Same as #2.	Same as #2.	No harvest restriction on 1st and 2nd order streams. An estimated 8,070 acres along 3rd order and larger streams would receive protection.	No harvest restriction on 1st and 2nd order streams; an estimated 26,400 acres along 3rd order and larger streams would receive complete protection.	Same as #2	Complete protection on all stream orders, totaling approximately 90,700 acres.	No harvest restriction on 1st and 2nd order streams; an estimated 18,300 acres along 3rd order and larger streams would receive complete protection.
Snags (#/acre)	0	None on intensive timber base. 6/acre on other forest lands.	6/acre in modified area control. 3/ac. on remainder.	Same as #3	Non on intensive base. 3/ac. on other forest land.	2/acre on 25% of intensive outside of old growth areas. 3/ac. on old growth and other land with no planned timber harvest.	Same as #3	3/acre on 35% of land base outside of old growth areas. 3/acre on old growth and other lands with no planned timber harvest.	Same as #3
Northern Spotted Owls Managed for (pairs)	0	0	18	18	0	25	18	55	19
Spacing Between Clearcuts (year)	3-5	3-5	5 year on intensive base variable in modified area control	Same as #3	3-5	10	Same as #3	15	Same as #3
Modified Area Control (acres)	0	24,800	52,050	52,050	0	0	52,050	0	35,868
RECREATION									
Potential Recreation Sites (#)	3	12	12	12	0	8	12	8	12
Natural Areas (potential) (#)	0	6	6	6	0	6	6	6	6
(designated) (#)	2	2	2	2	2	2	2	2	2
Areas of Critical Environmental Concern (number/acres)	4/600	4/2,100	4/2,100	4/2,100	0	8/3,100	4/2,100	8/3,100	4/2,100
Visual Resource Management Classes (acres)									
I	30	30	30	30	30	30	30	30	30
II	2,400	9,300	9,300	9,300	1,100	26,600	9,300	75,700	30
III	400	13,600	13,600	13,600	3,000	22,400	13,600	22,900	13,600
IV	421,170	401,070	401,070	401,070	419,870	374,970	401,070	325,370	401,070

Modified Area Control

Modified area control is a process for managing a given number of acres under a special timber harvest regime. In the Roseburg District, 52,047 acres are proposed to be managed under the modified area control concept for Alternatives 3, 4 and 7, 35,868 acres for Alternative 9 and 24,786 acres for Alternative 2. Harvest methods and volumes will vary, ranging from clearcut to individual tree selection, depending on the particular resource involved, the degree of protection necessary and the silvicultural system used.

Although in practice not every area would be cut, for purposes of calculating allowable cut yields, it was assumed the entire acreage would be managed on a 250 year harvest age. The volume to be harvested during the first decade under this concept was calculated manually, and the result was tested using SIMIX to ensure sustainability. Approximately 9 MM bd. ft. would be scheduled for harvest from these areas each year, except in Alternative 2, where modified area control harvest would be approximately 4 MM bd. ft, and Alternative 9, where harvest would be approximately 6 MM bd. ft. In actual practices, the volume generated would probably be concentrated during the last half of the decade, rather than occurring as a constant annual flow. This is caused by the necessity to complete detailed habitat and visual management plans on a number of these areas prior to scheduling timber harvests.

Forest land acres and age class distribution were determined individually for the allocations to benefit each resource. A listing of lands proposed for modified area control was developed as follows:

Resource Allocation	Commercial Forest Land Acres ¹		
	Alt. 2	Alts. 3, 4 & 7	Alt. 9
Mid-age and Old Growth	2,772	32,882	33,210
Riparian	18,332	16,519	0
VRM II	3,682	2,646	2,658
TOTAL	24,786	52,047	35,868

¹ Overlaps between resource allocations were eliminated.

Mid-age and old-growth is located in loosely arranged corridors. Ties with corridors in adjoining BLM districts are incorporated. These components also include functioning old growth systems distributed by seed zone and elevation in order to safeguard long term timber productivity (see Seral Stage Distribution Concept, Appendix A).

That portion of the allocated mid-age and old growth which exists as 80-acre blocks would be managed to maintain, as a minimum, 70 percent of these blocks in the 120+ age class. Normally, management would be to harvest the entire selected block within a decade to create an even-age stand, thereby attaining desired wildlife values in the future.

Osprey and heron habitat would be managed with seasonal harvest limitations to avoid disturbance of nesting pairs. When osprey and heron habitat overlaps visual protection areas, timber harvest would be managed in conjunction with VRM plans to maintain visual quality. Harvest in VRM II zones would be conducted according to the sequential settings delineated in the visual resource management plans. All visual plans are scheduled for completion by 1989.

Modified Area Control on Riparian Areas

For Alternatives 2, 3, 4 and 7 approximately 18,300 acres of riparian areas along third order and greater streams would be managed in vegetative buffers averaging 200 feet wide. This includes the actual riparian habitat (10,650 acres) shown in Chapter 2 plus additional transitional vegetation (7,650 acres). These areas would be managed to provide riparian values, including habitat structure important to cavity dwellers and other species, to maintain shade and woody structure important to fish habitat and to protect stream bank stability for water quality and temperature control.

Prior to timber management activities in these areas, site specific interdisciplinary plans would be completed to delineate riparian values as well as appropriate harvest levels and project design features.

In riparian areas, clearcuts would be permitted for road crossings, yarding corridors and harvest of small isolated parcels. This would permit access to the majority of the district land base, while minimizing impacts to a small portion of the riparian area. According to the sample 5-year timber sale plan, approximately 12 acres of riparian vegetation would be clearcut each year.

In addition, the sample 5-year timber sale plan includes approximately 96 acres that would be partial cut each year. In partial cut areas, silvicultural systems ranging from individual tree selection to group selection or shelterwood would be used.

The remaining areas of riparian vegetation are not planned for entry during the first decade.

Management practices which would be applied to riparian areas (including streamside buffers) include directional falling of timber away from

streams, no machinery operation in streams (except for road construction, e.g., bridges and culverts) and full suspension yarding across riparian management areas. No burning would be conducted in the riparian management areas.

As information and greater understanding regarding the management of these areas are gained throughout the decade, necessary revisions would be incorporated into the next planning cycle.

Allowable Cut Computation Forest Simulation Model

A computerized forest simulation model (SIMIX) is used to determine the highest sustainable allowable cut for each alternative. SIMIX calculates the allowable cut associated with the stated forest management plan. It can maximize an even-flow level of cut for some specific management regime, or a series of cut levels may be specified for as many as the first 10 decades followed by an even-flow level for the remainder of the projected period (40 decades). This lengthy projection period is not an attempt at a 400-year plan. It is used only to assure that the condition of no planned reduction in allowable cut can be met.

The clearcut option of SIMIX was utilized since clearcut is the predominant harvest method in all alternatives. For accuracy in measuring lumber and plywood production, the allowable cut is computed and projected into the future on the basis of cubic feet.

SIMIX computes the harvest level based on present inventory and projected growth resulting from the application of certain management practices (mortality salvage, precommercial and commercial thinning, commercial thinning only, forest genetics and final harvest cuts). Another treatment, fertilization, is included in conjunction with one or more of the above treatments. SIMIX must be told what treatments, when and the number of acres, to be treated. No rotation age is set; instead, a minimum cutting age constraint is specified. SIMIX is not designed to handle economic values or costs, and it does not seek out alternative schedules or strategies.

The model, designed for forests under an even-aged system of management, produces output data by decades for each age and treatment class and summarizes them numerically and graphically. These data include level of growing stock, annual growth, acreage by silvicultural practices and volume by harvesting practice. Consequently, it permits alternative plans to be evaluated on the basis of their respective production levels and fiscal requirements and serves as a basis for programming personnel and funds for the alternative selected. In effect, a

management plan is developed that schedules the production from commercial thinning, mortality salvage and final harvest operations and also the acreages for such treatments as reforestation and precommercial thinning. The model is geared to the proposed policies but is flexible to the extent that other regulatory policies can be applied in its use.

The Allowable Cut Effect (ACE)

A forest that is composed primarily of old-growth timber and recently cut-over stands exhibits a relatively low average annual growth. This results from slow or negative growth of the old stands and the fact that growth is not measurable (in end-product terms) in the young stands until they reach 20 or 30 years of age. Such a forest is in transition from an unmanaged to a managed or regulated state. In the classical sense, the regulated state is achieved when average annual harvest and growth are in equilibrium. At this point, maximum yield on a sustainable basis is reached. To compute an allowable cut on a forest in the transition state using this criteria would be extremely conservative and greatly lengthen the time until the regulated state was achieved. The BLM uses an alternative approach which is to project growth into the future based upon assumptions about management levels and to utilize excess harvest age timber to bridge the time gap until the ultimate growth level is achieved. This process of taking credit now for future growth increases expected to result from management has been termed the "Allowable Cut Effect" (ACE).

Figure C-1 illustrates this process in the context of conditions found in the SYUs, before land use allocations were made to other resource activities.

This forest is in the early to middle transition stage and, as the recent inventory found, has a relatively low average annual growth rate. An initial computation was made that assumed no intensive management practices were performed. Under this scheme, stands were projected to grow in a fashion similar to normal unmanaged forests. The lower growth curve in Figure C-1 shows the average annual growth path projected from these assumptions. When tested on the allowable cut model, it was determined that sufficient harvest age timber was available to bridge the gap until a regulated state was achieved.

Next, a high level of management was assumed. Practices (see Chapter 1, Forest Management Treatments and Design Elements) such as genetic improvement, precommercial and commercial thinning, fertilization and mortality salvage were used in projecting yield functions. The basis for most of these projections was the DFIT model. The higher growth curve in Figure C-1 shows the average annual growth path resulting from the intensive management assumptions. When tested

on the allowable cut model, it was determined that there was only enough harvest age timber available to take credit for a portion of the expected future growth increases. For full ACE credit to apply, there must be enough harvestable timber to bridge the previously mentioned time gap. Since this was not the case in the Roseburg SYUs, the allowable cut effect applied was limited to about 53 percent of the projected potential allowable cut effect. To set a cut level higher than the "actual" would cause a drop in future cut levels, a violation of Bureau policy. The foregoing narrative is supplemented by Figure C-2 which portrays both data source and information flow sequence for the allowable cut determination process.

FIGURE C-1
ALLOWABLE CUT EFFECT

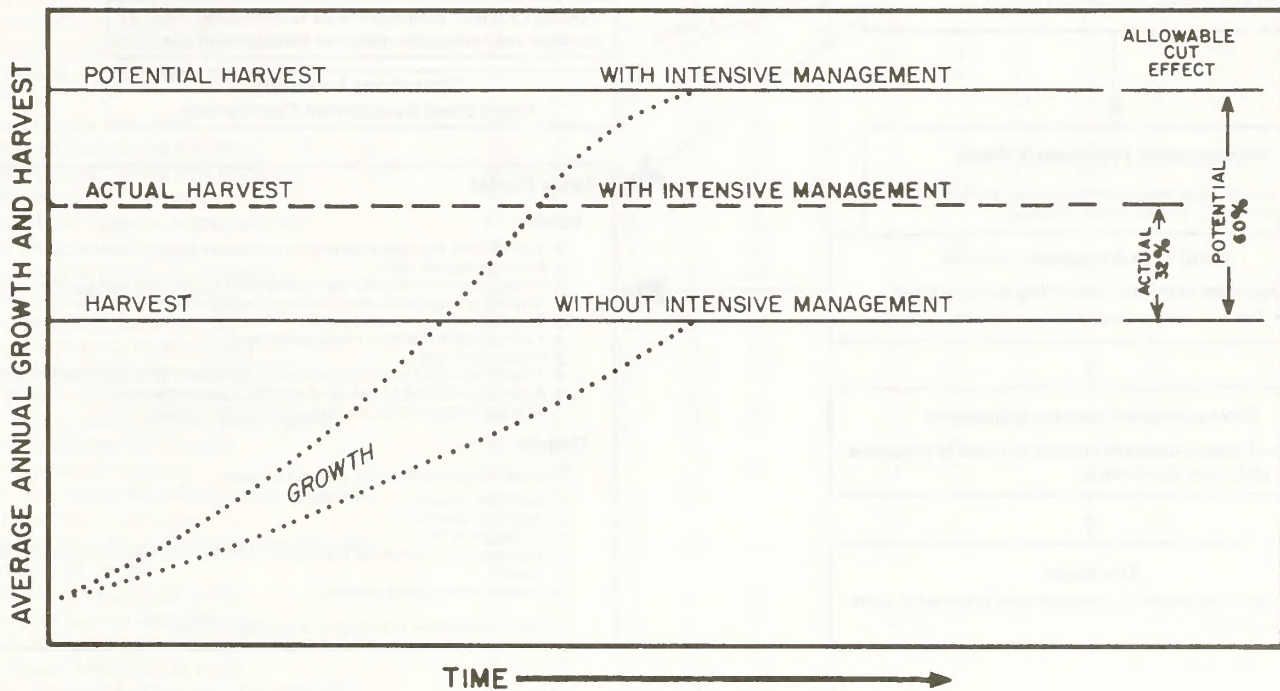
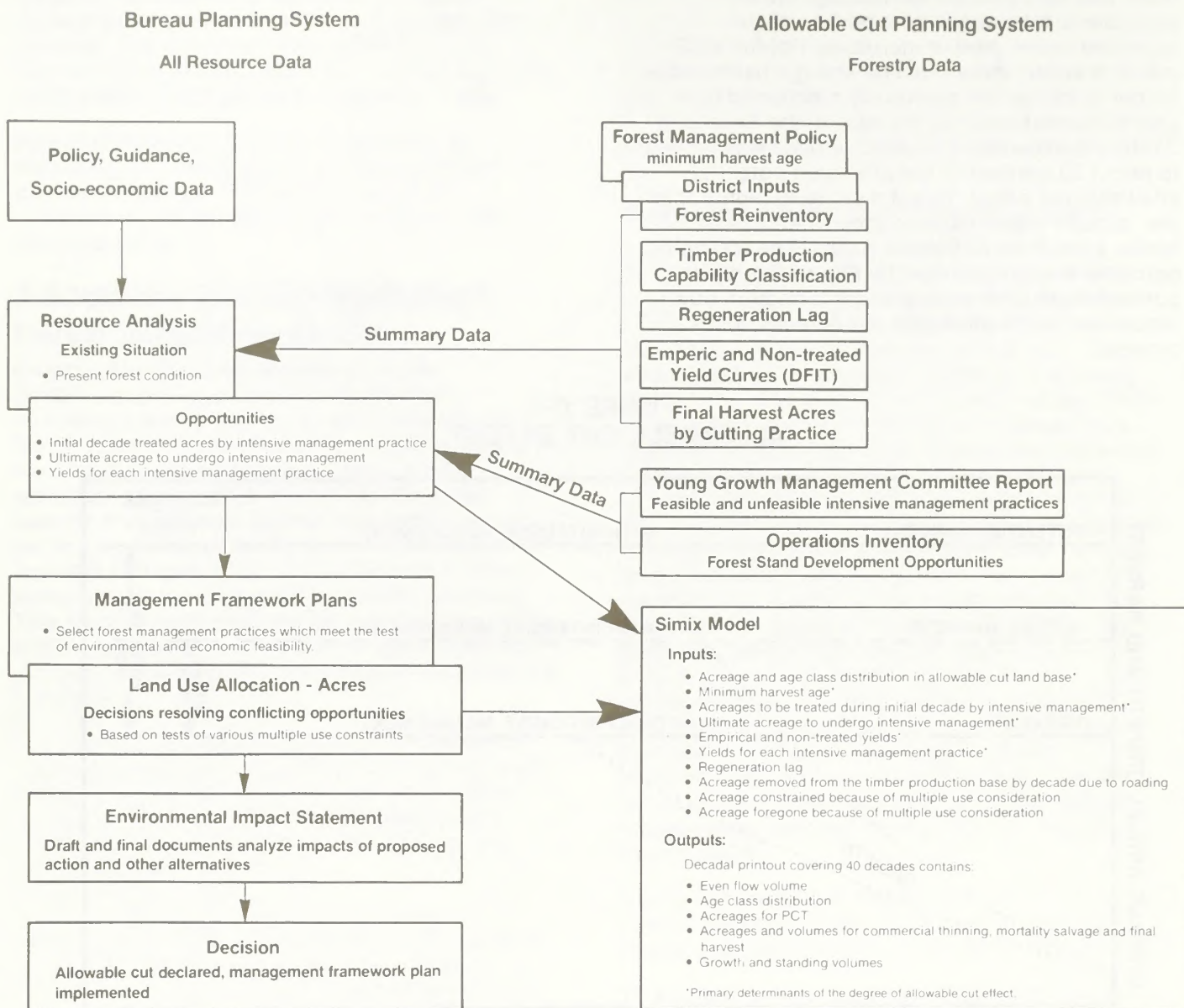


Figure C-2



Conifer Habitat Other Habitat

Appendix D Wildlife (continued)

Key

Resident

P=Permanent

S=Summer

W=Winter

M=Migratory

Habitat

U=Uses

O=Optimum

Relative Abundance

A=Abundant

C=Common

U=Uncommon

R=Rare

Conifer Habitat

Other Habitat

	Resident	Relative Abundance	Grass/Forb	Bush/Seedling	Pole/Sapling	2nd Growth	Mature	Old Growth	Hardwoods	Riparian	Dry Meadows	Wetlands	Snags	Talus Slopes/Climbs	Other
Black Bear (<i>Ursus americanus</i>)	P	C	U	U	U	U	O	O	U	U	U	U	U	U	
Ringtail (<i>Bassariscus astutus</i>)	P	C	U	U	U	U	U	U	U	U	U	U	U	U	
Raccoon (<i>Procyon lotor</i>)	P	O	U	U	U	U	U	U	U	O	U	O	U	U	
Marten (<i>Martes americana</i>)	P	R	U	U	U	U	O	O	U	U	U	U	U	U	
Fisher (<i>Martes pennanti</i>)	P	R	U	U	U	U	O	O	U	U	U	U	U	U	
Ermine (<i>Mustela erminea</i>)	P	U	U	U	U	U	O	O	U	U	U	U	U	U	
Long-tailed Weasel (<i>Mustela frenata</i>)	P	O	U	U	U	U	U	U	U	U	U	O	U	U	
Mink (<i>Mustela vison</i>)	P	O	U	U	U	U	U	U	U	O	U	O	U	U	
Western Spotted Skunk (<i>Spilogale gracilis</i>)	P	O	U	U	U	U	O	O	U	U	U	U	U	U	
Striped Skunk (<i>Mephitis mephitis</i>)	P	O	U	U	U	U	U	U	U	U	U	U	U	U	
River Otter (<i>Lutra canadensis</i>)	P	U	U	U	U	U	U	U	U	O	U	O	U	U	
Mountain Lion (<i>Felis concolor</i>)	P	U	U	U	U	U	O	O	U	U	U	U	U	O	
Bobcat (<i>Felis rufus</i>)	P	O	U	U	U	U	O	O	U	U	U	U	U	O	
Roosevelt Elk (<i>Cervus elaphus roosevelti</i>)	P	C	U	U	U	U	O	O	U	O	O	U	U	U	
Columbian Black-tailed Deer															
<i>Odocoileus hemionus columbianus</i>	P	A	O	O	U	U	O	O	U	U	U	U	U	U	
Columbian White-tailed Deer															
(<i>Odocoileus virginianus leucurus</i>)	P	U							O	O	U	U			
Birds															
Common Loon (<i>Gavia immer</i>)	P	R								U		O			
Eared Grebe (<i>Podiceps nigricollis</i>)	W	U								O		O			
Western Grebe (<i>Aechmophorus occidentalis</i>)	W	U								U		O			
Pied-billed Grebe (<i>Podilymbus podiceps</i>)	P	U								U		O			
Double-crested Cormorant (<i>Phalacrocorax auritus</i>)	P	R								O		O			
Great Blue Heron (<i>Ardea herodias</i>)	P	C	U	U	U	U	O	O	U	O		O		U	
Green Heron (<i>Butorides striatus</i>)	S	U					U	U		O		O			
Great Egret (<i>Casmerodius albus</i>)	P	R								O		O			
Black-crowned Night Heron (<i>Nycticorax nycticorax</i>)	P	U					U	U		O		O			
American Bittern (<i>Botarus lentiginosus</i>)	S	U								U		O			
Whistling Swan (<i>Olor columbianus</i>)	M/W	R	U							U		O			
Canada Goose (<i>Branta canadensis</i>)	M/W	U	U							U		O			
White-fronted Goose (<i>Anser albifrons</i>)	M	R	U							U		O			
Snow Goose (<i>Chen caerulescens</i>)	M/W	R								U		O			
Mallard (<i>Anas platyrhynchos</i>)	P	C	U	U		U	U	U		O		O			
Gadwall (<i>Anas strepera</i>)	M	U	U	U						U		O			
Pintail (<i>Anas acuta</i>)	M/W	U	U	U						U		O			
Green-winged Teal (<i>Anas crecca</i>)	M/W	C	U	U						U		O			
Blue-winged Teal (<i>Anas discors</i>)	M	U	U	U						U		O			
Cinnamon Teal (<i>Anas cyanoptera</i>)	S	U	U	U						U		O			
American Wigeon (<i>Anas americana</i>)	M/C	C	U							U		O			
Northern Shoveler (<i>Anis clypeata</i>)	M	U								U		O			
Wood Duck (<i>Aix sponsa</i>)	P	C				U	U	U	U	O		O		O	
Redhead (<i>Aythya americana</i>)	M/W	U								U		O			
Ring-necked Duck (<i>Aythya collaris</i>)	M	C								U		O			
Canvasback (<i>Aythya valisineria</i>)	W	R								U		O			
Greater Scaup (<i>Aythya marila</i>)	W	U								U		O			
Lesser Scaup (<i>Aythya affinis</i>)	W	C								U		O			
Common Goldeneye (<i>Bucephala clangula</i>)	S	U								U		O		O	
Bufflehead (<i>Bucephala albeola</i>)	S	U					O	O		U		O		O	
Ruddy Duck (<i>Oxyura jamaicensis</i>)	W	U								U		O		O	
Hooded Merganser (<i>Lophodytes cucullatus</i>)	P	U					U	U		O		O		O	

Appendix D Wildlife (continued)

Key		Conifer Habitat							Other Habitat							
Resident	Habitat	Resident	Relative Abundance	Grass/Forb	Bush/Seedling	Pole/Sapling	2nd Growth	Mature	Old Growth	Hardwoods	Riparian	Dry Meadows	Wetlands	Snags	Talus Slopes/Climbs	Other
P=Permanent	U=Uses															
S=Summer	O=Optimum															
W=Winter																
M=Migratory																
Relative Abundance																
A=Abundant																
C=Common																
U=Uncommon																
R=Rare																
Common Merganser (Mergus Merganser)	P	C						C	C		O		O	C		
Red-breasted Merganser (Mergus serrator)	W	C									O		O			
Turkey Vulture (Cathartes aura)	S	C		U	C										O	
Northern Goshawk (Accipiter gentilis)	S	C														
Sharp-shinned Hawk (Accipiter striatus)	P	C			C	C	C	C	C			C		C		
Cooper's Hawk (Accipiter cooperi)	P	C		C	C	C	C	C	C			C		C		
Red-tailed Hawk (Buteo jamaicensis)	P	C			C		C	O	O			C		C		C
Rough-legged Hawk (Buteo lagopus)	W	R			C			O	O			C	C	C	C	C
Golden Eagle (Aquila chrysaetos)	S	U			C			O	O			C	C	C	C	C
Bald Eagle (Haliaeetus leucocephalus)	P	U		C	C			O	O			C	O	O	C	C
Northern Harrier (Circus cyaneus)	P	U		C	C			O	O			C	O	O	C	C
Osprey (Pandion haliaetus)	B	C						O	O			C	O	O	C	C
Prairie Falcon (Falco mexicanus)	W	R		C	C							C	O	C	C	C
Merlin (Falco columbarius)	P	R		C	C	U	U	U	U		U	C	C	C	C	C
American Kestrel (Falco sparverius)	P	C		O	C	U	U	U	U	U	U	O	C	O	C	C
Blue Grouse (Dendragapus obscurus)	P	C		U	U	O	O	C	U		U	C	C			
Ruffed Grouse (Bonasa umbellus)	P	C				C	C	C				C	C			
California Quail (Lophortyx californicus)	P	C		U	U	C			U			C	C			
Mountain Quail (Oreortyx pictus)	P	C				C						C	C			
Ring-necked Pheasant (Phasianus colchicus)	P	U			U							C	C			
Virginia Rail (Rallus limicola)	S	R			C											
Sora (Porzana carolina)	P	R		U												
American Coot (Fulica americana)	P	C		U	U											
Semi-palmated Plover (Calidris pusilla)	M	R		U												
Killdeer (Charadrius vociferus)	P	C		U												
Common Snipe (Capella gallinago)	P	U		U	U											
Spotted Sandpiper (Actitis macularia)	S	C		U												
Solitary Sandpiper (Tringa solitaria)	M	U		U								U				
Greater Yellowlegs (Tringa melanoleucus)	M	U		U												
Lesser Yellowlegs (Tringa flavipes)	M	U		U												
Least Sandpiper (Calidris minutilla)	M	U														
Long-billed Dowitcher (Limnodromus scolopaceus)	M	U														
Dunlin (Calidris alpina)		U														
Western Sandpiper (Calidris mauri)	M/W	U									O					
Short-billed Dowitcher (Limnodromus griseus)	M	U														
Northern Phalarope (Lobipes lobatus)	M	U									O					
Glaucous-winged Gull (Larus glaucescens)	S	U														U
Western Gull (Larus occidentalis)	S	U									O					
Herring Gull (Larus argentatus)	W	U									U					U
California Gull (Larus californicus)	S	U	U								U					U
Ring-billed Gull (Larus delawarensis)	P	U	U								U					U
Band-tailed Pigeon (Columba fasciata)	S	C	U	O	U	U	O	O	O	U	U		O	U	U	
Rock Dove (Columba livia)	P	C	U												O	U
Mourning Dove (Zengida macroura)	P	C	U	U	U	U	U	U	U	U	U	U	U	U		
Barn Owl (Tyto alba)	P	C	U	U	U	U	U	U	U	U	U	U	U	U	U	O
Screech Owl (Otus asio)	P	C	U	U	U	U	U	O	O	U	O	U	U	O		
Great Horned Owl (Bubo virginianus)	P	C	U	U	U	U	U	O	O	U	U	U	O	O		
Snowy Owl (Nyctea scandiaca)	W	R	U	U				O	O	U	U	U	U	O		
Pygmy Owl (Glaucidium gnoma)	P	C	U	U	U	U	U	O	O	U	U	U	U	O		
Northern Spotted Owl (Strix occidentalis)	P	U					U	O	O		U	U	U	O		
Short-eared Owl (Asio flammeus)	P	R	U	U						U	U	U	U	O		
Saw-whet Owl (Aegolius acadicus)	P	U						O	O	U	O	U	O	O		

Appendix D Wildlife (continued)

Key		Conifer Habitat						Other Habitat								
Resident	Habitat	Resident	Relative Abundance	Grass/Forb	Bush/Seedling	Pole/Sapling	2nd Growth	Mature	Old Growth	Hardwoods	Riparian	Dry Meadows	Wetlands	Snags	Talus Slopes/Cliffs	Other
P=Permanent	U=Uses															
S=Summer	O=Optimum															
W=Winter																
M=Migratory																
Relative Abundance																
A=Abundant																
C=Common																
U=Uncommon																
R=Rare																
Common Nighthawk (<i>Chordeiles minor</i>)		S	C	U	U					U	U	U			U	
Vaux's Swift (<i>Chaetura vauxi</i>)		S	C					O	O	U	U	U		O		U
Anna's Hummingbird (<i>Calypte anna</i>)		S	C	O	O			U	U	U	U	O	U			
Rufous Hummingbird (<i>Selasphorus rufus</i>)		S	C	O	O	U	U	U	U	U	U	O	U			
Belted Kingfisher (<i>Megasceryle alcyon</i>)		P	C							U	U		U			
Common Flicker (<i>Colaptes auratus</i>)		P	C	U	U	U	U	U	U	U	U	U	U	U	U	U
Pileated Woodpecker (<i>Dryocopus pileatus</i>)		P	C					O	O	U	U	U				
Acorn Woodpecker (<i>Melanerpes formicivorus</i>)		P	C							O	U	U				
Lewis Woodpecker (<i>Melanerpes lewis</i>)		W	U	U	U	U	U	U	U	U	U	U	U			
Yellow-bellied Sapsucker (<i>Sphyrapicus varius</i>)		P	C		U	U	U	O	O	U	U	U		O	O	O
Hairy Woodpecker (<i>Picoides villosus</i>)		P	C		U	U	U	O	O	U	U		O	O		
Downy Woodpecker (<i>Picoides pubescens</i>)		P	C		U	U	U	U	U	U	U	U	O			
Western Kingbird (<i>Tyrannus verticalis</i>)		M	C	U	U	U	U	U	U	U	U	U	O		U	
Ash-throated Flycatcher (<i>Myiarchus cinerascens</i>)		P	U		U	U		U		U				O		
Willow Flycatcher (<i>Empidonax traillii</i>)		S	C		U	U	U	U		U	O		O	O		
Hammond's Flycatcher (<i>Empidonax hammondi</i>)		S	C					U	O	O	U	U		U		U
Dusky Flycatcher (<i>Empidonax oberholseri</i>)		S	U		U	U	U	U	U	U	U			U		
Western Flycatcher (<i>Empidonax difficilis</i>)		S	C					O	O	U	U		O			
Western Wood Pewee (<i>Contopus sordidulus</i>)		S	C		U	U	U	U	U	U	U	U	U			
Olive-sided Flycatcher (<i>Nuttallornis borealis</i>)		S	U	U	U	U	U	U	U	U	U	U	U	U		
Violet-green Swallow (<i>Tachycineta thalassina</i>)		S	C	U	U	U	U	U	U	U	U	U	U	O	U	
Tree Swallow (<i>Iridoprocne bicolor</i>)		S	C	U	U			O	O	U	U	U	U	O		
Bank Swallow (<i>Riparia riparia</i>)		S	U		U	U				U	U	U			U	
Rough-winged Swallow (<i>Stelgidopteryx ruficollis</i>)		S	U	U						U	O	U	U		O	
Barn Swallow (<i>Hirundo rustica</i>)		S	C	U						U	O	O	U		O	U
Cliff Swallow (<i>Petrochelidon pyrrhonota</i>)		S	C	U						U	U	U			O	
Purple Martin (<i>Progne subis</i>)		S	U	U	U			O	O	U	O		O	O		
Gray Jay (<i>Perisoreus canadensis</i>)		S	U			U	U	O	O	U	U		U	U		
Steller's Jay (<i>Cyanocitta stelleri</i>)		P	C		U	U	U	U	U	U	U				U	
Scrub Jay (<i>Aphelocoma coerulescens</i>)		P	C			U	U	U	U	U	U					
Northern Raven (<i>Corvus corax</i>)		P	C	U	U	U	U	O	O	U	U	U	U	U		
American Crow (<i>Corvus brachyrhynchos</i>)		P	C	U	U	U	U	U	U	U	U	U	U	U		
Black-capped Chickadee (<i>Parus atricapillus</i>)		P	C		U	U	U	U	U	U	O		U	O	O	
Mountain Chickadee (<i>Parus gambeli</i>)		P	U			U	U	U	U		U		U	O	O	
Chestnut-backed Chickadee (<i>Parus rufescens</i>)		P	U			U	U	O	O		U		U	O	O	
Bushtit (<i>Psaltirparus minimus</i>)		P	C		U	U	U	U	U	U	U		U	O	O	
White-breasted Nuthatch (<i>Sitta carolinensis</i>)		P	U		U	U	U	U	U	U	U			O	O	
Red-breasted Nuthatch (<i>Sitta canadensis</i>)		P	C			U	U	O	O	U	U			O	O	
Pygmy Nuthatch (<i>Sitla pygmea</i>)		P	U			U	U	U	U	U	U			O	O	
Brown Creeper (<i>Certhia familiaris</i>)		P	C		O	U	U	O	O	U	U			U	U	
Wrentit (<i>Chamaea fasciata</i>)		P	C							U	U	U	U			
Dipper (<i>Cinclus mexicanus</i>)		P	C	C						U	O	O	O			
House Wren (<i>Troglodytes aedon</i>)		S	C		U	U	U			U	U	U	U	O		
Winter Wren (<i>Troglodytes trogladytes</i>)		P	C		U	U	U	O	O	U	O	U	U	U		
Bewick's Wren (<i>Thryomanes bewickii</i>)		P	C			U	U	U	U	U	U	U	U	U	U	
Long-billed Marsh Wren (<i>Cistothorus palustris</i>)		P	U							U	U	U	U	U		
American Robin (<i>Turdus migratorius</i>)		P	A	U	U	U	U	U	U	U	U	U	U	U		
Varied Thrush (<i>Ixoreus naevius</i>)		P	C			U	U	O	O	U	U	U	U	U		
Hermit Thrush (<i>Catharus guttata</i>)		W	C			U	U	O	O	U	U	U	U	U		
Swainson's Thrush (<i>Catharus ustulata</i>)		S	C		U	U	U	U	U	U	O	U	U	U		
Western Bluebird (<i>Sialia mexicana</i>)		P	C	U	U					U	U	U	U	U		
Townsend's Solitaire (<i>Myadestes townsendi</i>)		W	C	U	U	U	U	U	U	U	U	U	U	U	U	
Golden-crowned Kinglet (<i>Regulus satrapa</i>)		P	C		U	U	U	O	O	U	U	U	U	U		

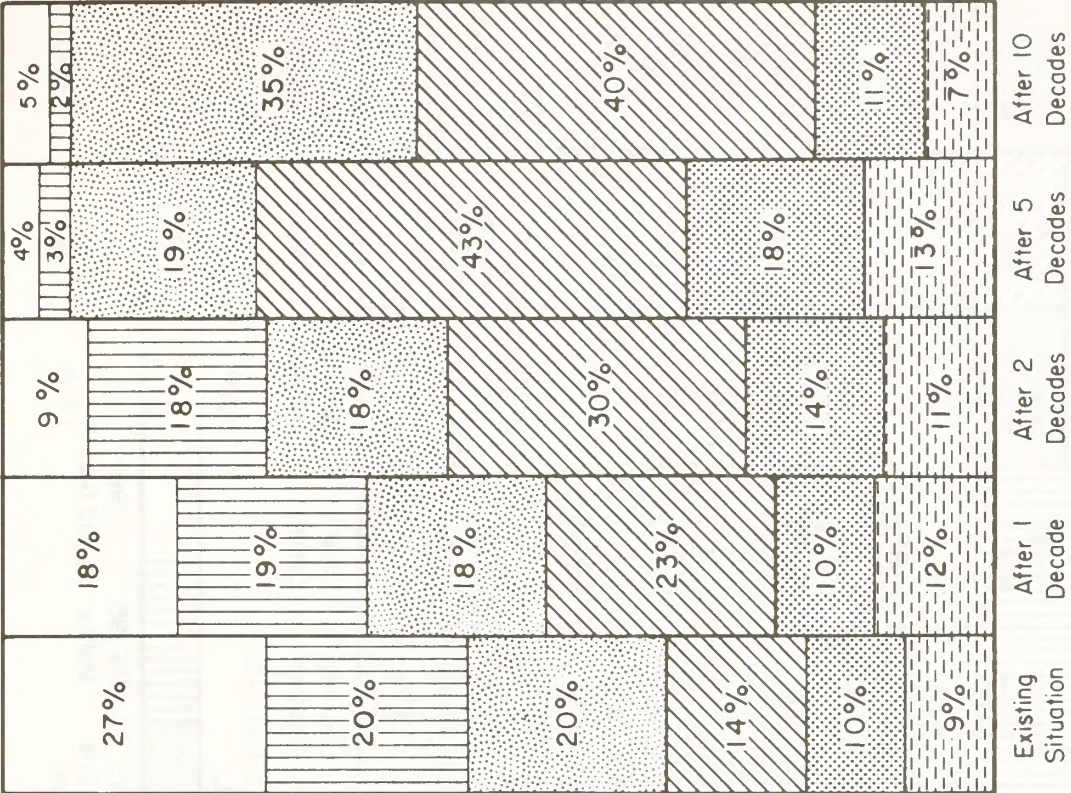
Appendix D Wildlife (continued)

Key		Conifer Habitat								Other Habitat							
Resident	Habitat	Resident	Relative Abundance	Grass/Forb	Bush/Seedling	Pole/Sapling	2nd Growth	Mature	Old Growth	Hardwoods	Riparian	Dry Meadows	Wetlands	Snags	Talus Slopes/Cliffs	Other	
P=Permanent	U=Uses																
S=Summer	O=Optimum																
W=Winter																	
M=Migratory																	
Relative Abundance																	
A=Abundant																	
C=Common																	
U=Uncommon																	
R=Rare																	
Ruby-crowned Kinglet (Regulus calendula)		P	C		U	U	U	O	O	U	U		U				
Water Pipit (Anthus spinoletta)		W	R														
Bohemian Waxwing (Bombycilla garrulus)		S	R		U	U	U	U		U	U						
Cedar Waxwing (Bombycilla cedrorum)		P	C		U	U	U	U		U	U						
Northern Shrike (Lanius excubitor)		S	R	U	U						U	U	U				
Starling (Sturnus vulgaris)		P	A	U	U						U	U	U	U	O		
Hutton's Vireo (Vireo huttoni)		P	U		U	U	U	U	U	U		U					
Solitary Vireo (Vireo solitarius)		S	C			U	U	U	U	U		U					
Warbling Vireo (Vireo gilvus)		S	C			U	U	U	U	U	O		U				
Orange-crowned Warbler (Vermivora celata)		S	C		U	U	U			U	U		U				
Nashville Warbler (Vermivora ruficapilla)		M	C		U	U	U			U	U		U				
Yellow Warbler (Dendroica petechia)		S	C		U	U	U	U	U	U	U		U				
Yellow-rumped Warbler (Dendroica coronata)		P	C		U	U	U	U	U	U	U		U				
Black-throated Gray Warbler (Dendroica nigrescens)		S	C		U	U	U	U	U	U	U		U				
Townsend's Warbler (Dendroica townsendi)		M/W	C			U	U	U	U	U	U		U				
Hermit Warbler (Dendroica occidentalis)		S	C			U	U	U	U	U	U		U				
MacGillivray's Warbler (Oporornis tolmiei)		S	C		U	U	U	U	U	U	U	U	U				
Yellowthroat (Geothlypis trichas)		S	C	U	U					U	U	U	U				
Yellow-breasted Chat (Icteria virens)		S	C		U	U	U			U	U		U				
Wilson's Warbler (Wilsonia pusilla)		S	C		U	U				U	O		U				
House Sparrow (Passer domesticus)		P	A													U	
Western Meadowlark (Sturnella neglecta)		P	C		U	U						U	U				
Yellow-headed Blackbird (Xanthocephalus xanthocephalus)		S	R								O						
Red-winged Blackbird (Agelaius phoeniceus)		P	C	U	U					U	O		U				
Northern Oriole (Icterus galbula)		S	C	U						U	O		U				
Brewer's Blackbird (Euphagus cyanocephalus)		P	A	U	U	U				U	U	U	U				
Brown-headed Cowbird (Molothrus ater)		S	C	U	U	U				U	U	U	U				
Western Tanager (Piranga ludoviciana)		S	C			U	U	O	O	U	U		U				
Black-headed Grosbeak (Pheucticus melanocephalus)		S	U							U	O		U				
Lazuli Bunting (Passerina amoena)		S	U		U	U				U	U	U	U				
Evening Grosbeak (Hesperiphona vespertina)		P	C		U	U	U	O	O	U	U		U				
Purple Finch (Carpodacus purpureus)		P	C			U	U	U	U	U	U						
House Finch (Carpodacus mexicanus)		P	C		U	U	U	U	U	U	U		U			U	
Pine Siskin(Carduelis pinus)		P	C	U	U	U	U	O	O	U	U						
American Goldfinch (Carduelis tristis)		P	C	O	U	U	U			U	U						
Lesser Goldfinch (Carduelis psaltria)		P	C	O	U	U	U			U	U		O				
Red Crossbill (Loxia curvirostra)		P	U					O	O	U	U						
Rufous-sided Towhee (Pipilo erythrophthalmus)		P	C		U	U	U			U	U		U				
Savannah Sparrow (Passerculus sandwichensis)		P	C	U													
Vesper Sparrow (Poocetes gramineus)		S	U	U	U							U					
Dark-eyed Junco (Junco hyemalis)		P	A	U	U	U	U	U	U	U	U	U	U				
Chipping Sparrow (Spizella passerina)		P	C	U	U	U	U			U	U	U	U				
White-crowned Sparrow (Zonotrichia leucophrys)		P	C	U	U	U	U				U	U	U				
Golden-crowned Sparrow (Zonotrichia atricapilla)		W	C	U	U					U		U	U				
Fox Sparrow (Passerella iliaca)		W	C		U	U	U				U	U	U				
Lincoln's Sparrow (Melospiza lincolnii)		M/W	U		U	U				U	U	U	U				
Song Sparrow (Melospiza melodia)		P	A	U	U	U				U	U	U	U				

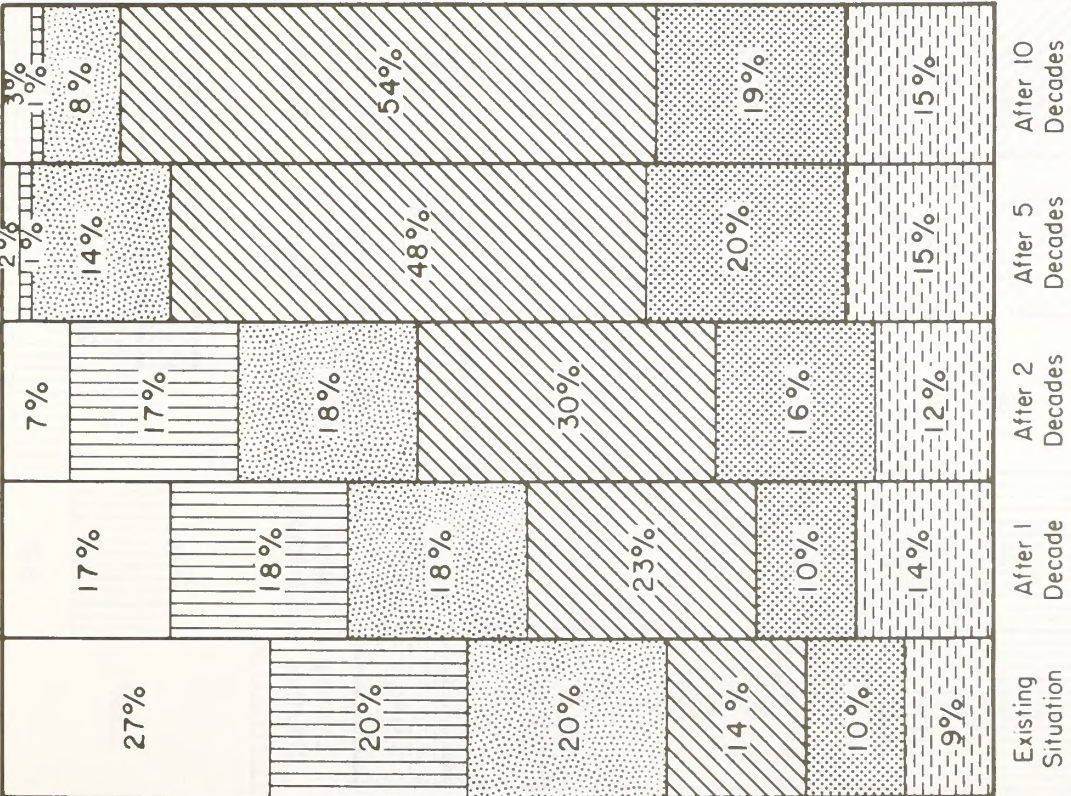
Appendix D Wildlife (continued)

Key		Conifer Habitat										Other Habitat					
Resident	Habitat	Resident	Relative Abundance	Grass/Forb	Bush/Seedling	Pole/Sapling	2nd Growth	Mature	Old Growth	Hardwoods	Riparian	Dry Meadows	Wetlands	Snags	Talus Slopes/Cliffs	Other	
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S=Summer	O=Optimum																
W=Winter																	
M=Migratory																	
Relative Abundance																	
A=Abundant																	
C=Common																	
U=Uncommon																	
R=Rare																	
Reptiles																	
Western Pond Turtle (<i>Clemmys marmorata</i>)	P	C									O						
Western Fence Lizard (<i>Sceloporus occidentalis</i>)	P	C	U	U						U	U	O			U		
Western Skink (<i>Eumeces skiltonianus</i>)	P	C	U	U						U	U	O			U		
Southern Alligator Lizard (<i>Gerrhonotus multicarinatus</i>)	P	C	U	U	U	U	U	U	U		U	U					
Northern Alligator Lizard (<i>Gerrhonotus coeruleus</i>)	P	C	U	U						U	U	U			U		
Rubber Boa (<i>Charina bottae</i>)	P	C			U	U	U	U	U	U	U	U					
Ringneck Snake (<i>Diadophis punctatus</i>)	P	U	U	U	U	U	U	U	U	O	U	U					
Sharp-tailed Snake (<i>Contia tenuis</i>)	P	R	U	U	U	U	U	U	U	O	U	U					
Western Yellow-bellied Racer (<i>Coluber constrictor</i>)	P	U	O	U	U			U	U	U	U	U					
Pacific Gopher Snake (<i>Pituophis melanoleucus</i>)	P	C	U	U	U	U	U	U	U	U	U	U			U		
Common Kingsnake (<i>Lampropeltis getulus</i>)	P	U	U	U	U	U	U	U	U	U	U	U					
California Mountain Kingsnake (<i>Lampropeltis zonata</i>)	P	R	U	U	U	U	U	U	U			U					
Common Garter Snake (<i>Thamnophis sirtalis</i>)	P	C	U	U	U	U	U	U	U	U	O	U	O				
Western Terrestrial Garter Snake (<i>Thamnophis elegans</i>)	P	C	U	U	U	U	U	U	U	U	O	U	O				
Western Aquatic Garter Snake (<i>Thamnophis couchi</i>)	P	U	U	U	U	U	U	U	U	U	O		O				
Northwestern Garter Snake (<i>Thamnophis ordinoides</i>)	P	U	U	U	U	U	U	U	U	U	U	U					
Western Rattlesnake (<i>Crotalus molossus</i>)	P	U	U	U	U	U	U	U	U	U	U	U			U		
Amphibians																	
Northwestern Salamander (<i>Ambystoma gracile</i>)	P	R	U	U		U	U	U	U	U	O		O				
Long-toed Salamander (<i>Ambystoma macrodactylum</i>)	P	U	U	U	U		U	U	U	U			O				
Pacific Giant Salamander (<i>Dicamptodon ensatus</i>)	P	C					U	U	U	U	O		O				
Olympic Salamander (<i>Rhyacotriton olympicus</i>)	P	U					U	U	U	U	O		O		U		
Rough-skinned Newt (<i>Taricha granulosa</i>)	P	A	U	U	U	U	U	U	U	U	O		O				
Dunn's Salamander (<i>Plethodon dunni</i>)	P	C					U	U	U	U	O		O		U		
Western Red-backed Salamander (<i>Plethodon vehiculum</i>)	P	C		U	U	U	U	U	U	U			O		U		
Oregon Salamander (<i>Ensatina eschscholtzi</i>)	P	C				U		O	O		O		O				
Clouded Salamander (<i>Aneides ferreus</i>)	P	C						O	O		O		O				
Tailed Frog (<i>Ascaphus truei</i>)	P	U	U	U	U	U	U	U	U		O		O				
Western Toad (<i>Bufo boreas</i>)	P	R	U	U	U	U	U	U	U	U	O		O				
Pacific Tree Frog (<i>Hyla regilla</i>)	P	C	U	U	U	U	U	U	U	U	O		O		U		
Red-legged Frog (<i>Rana aurora</i>)	P	C	U			U	U	U	U	U	O		O				
Yellow-legged Frog (<i>Rana boylei</i>)	P	U				U	U	U	U	U	O		O				
Bullfrog (<i>Rana catesbeiana</i>)	P	C								O	O		O				

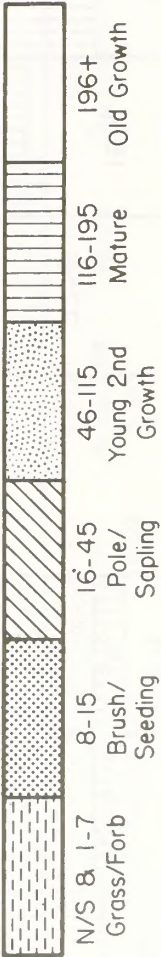
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ALTERNATIVE 1

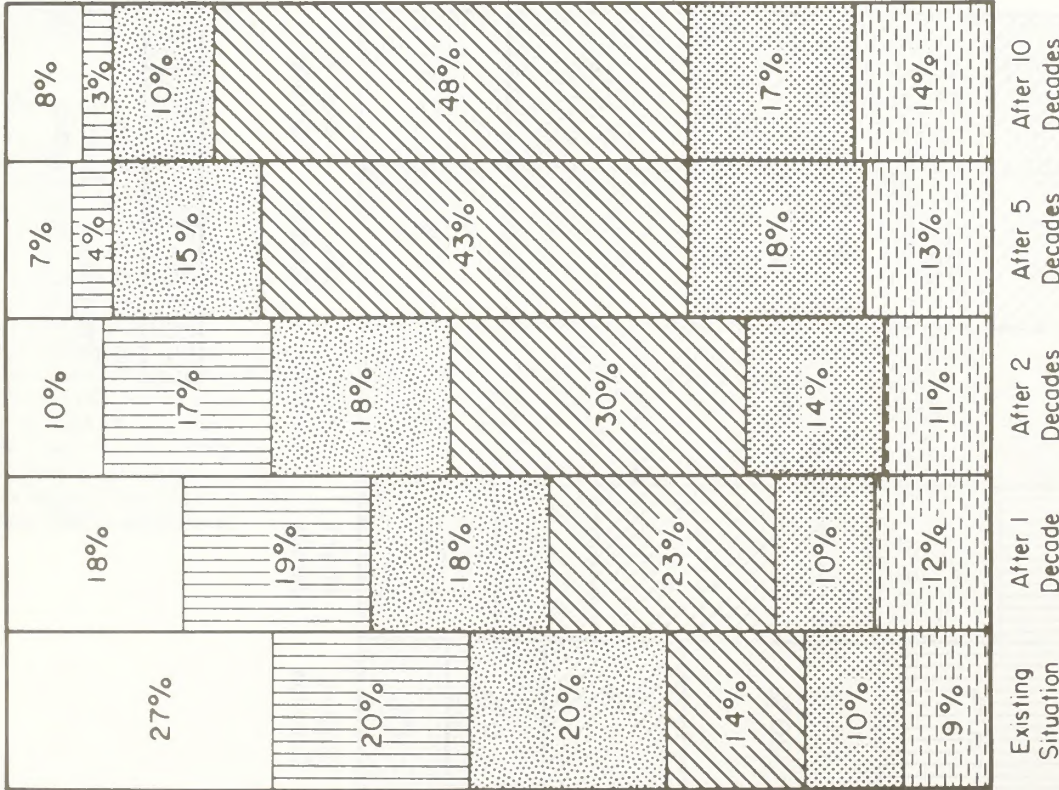


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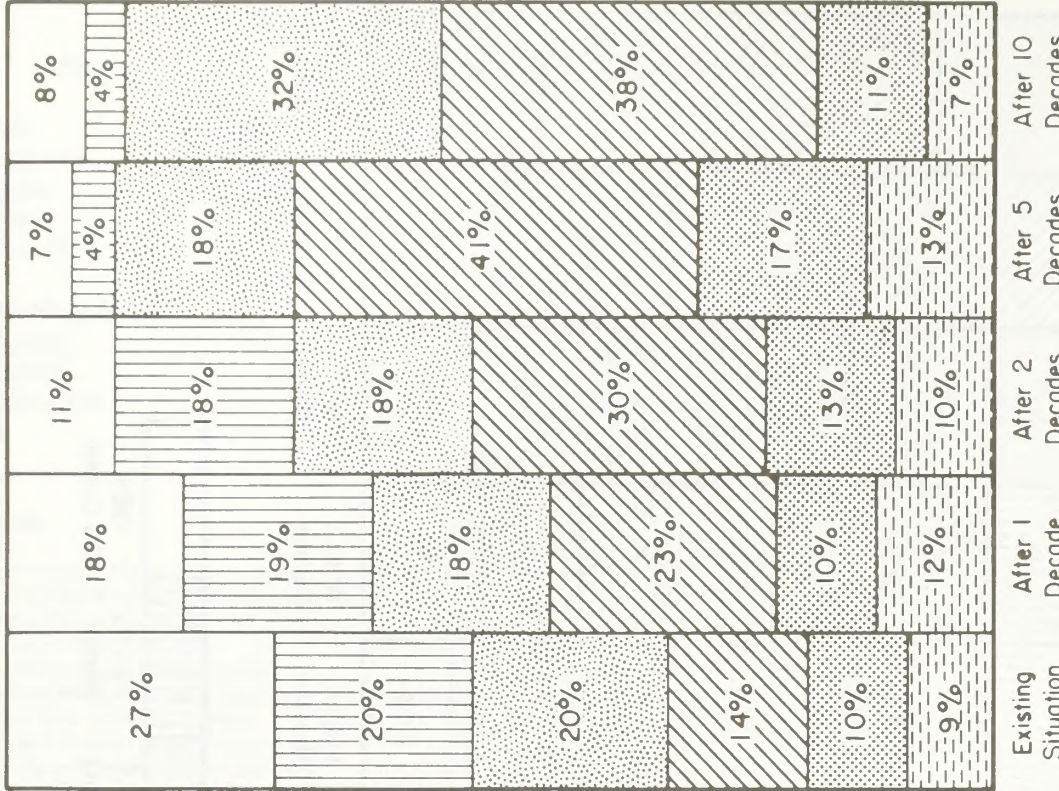


Appendix E (continued)

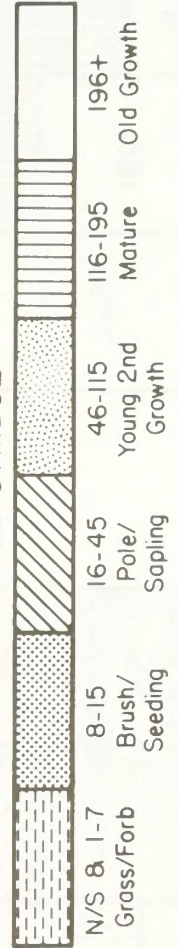
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ALTERNATIVE 4

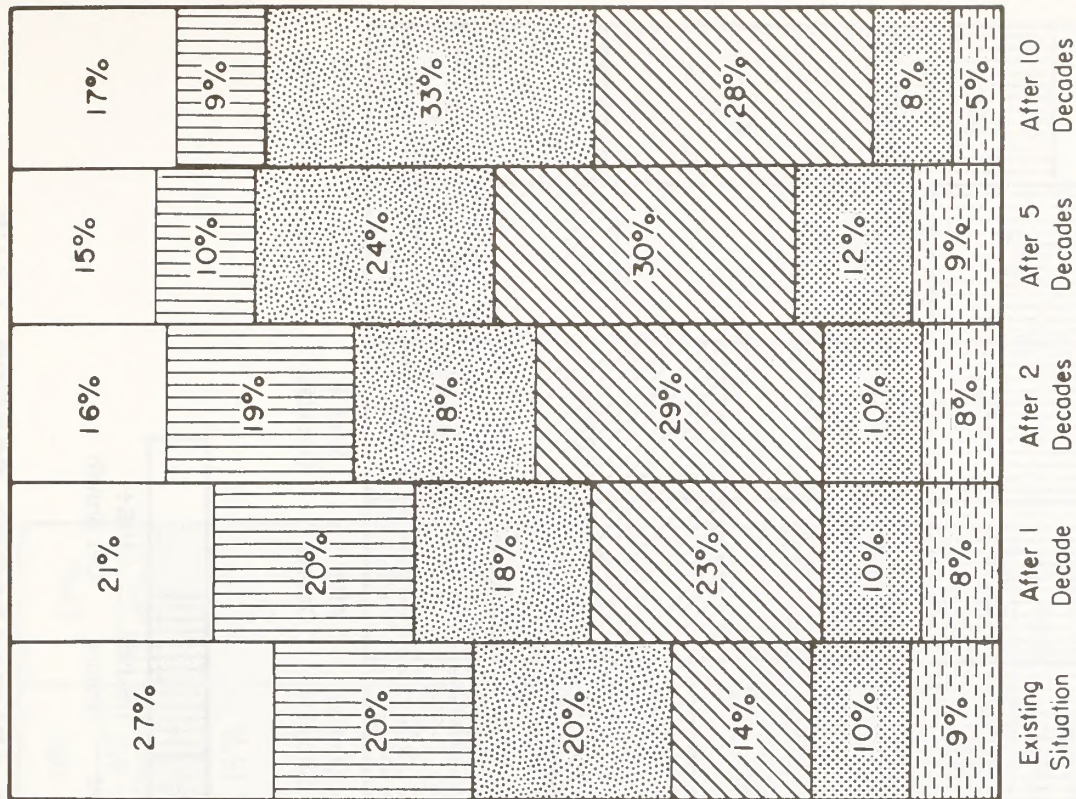


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Appendix E (continued)

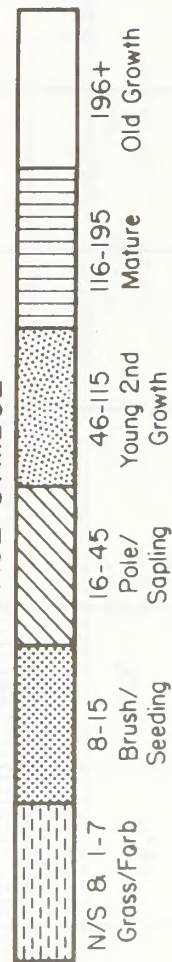
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ALTERNATIVE 5

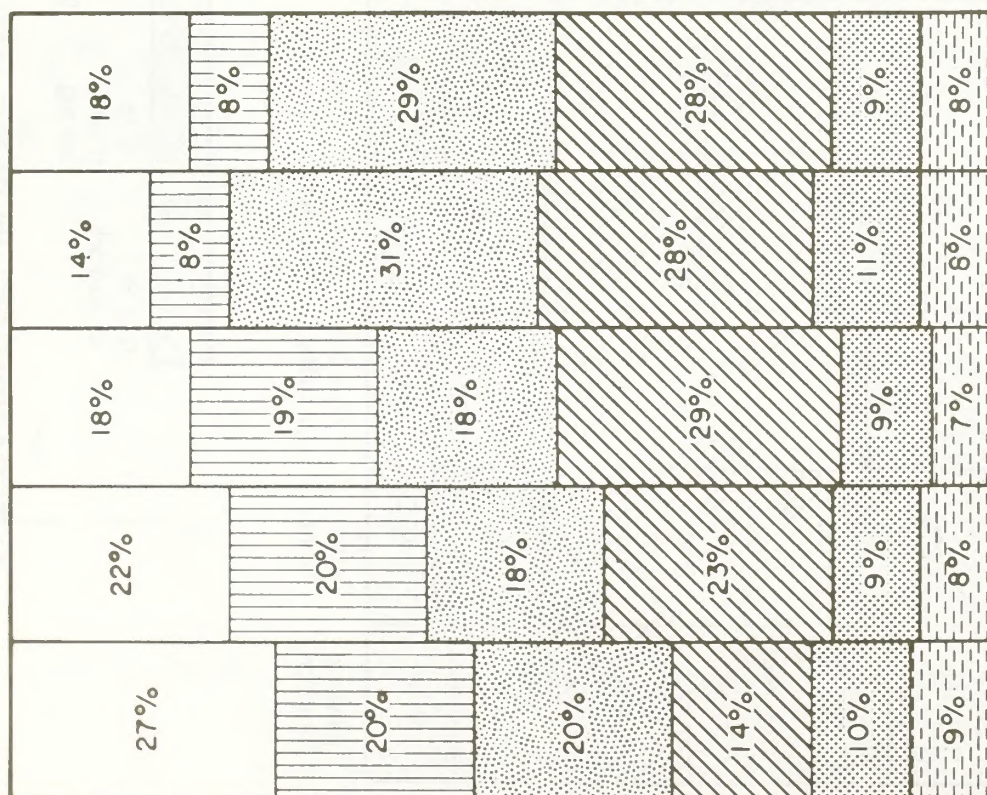


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Appendix E (continued)

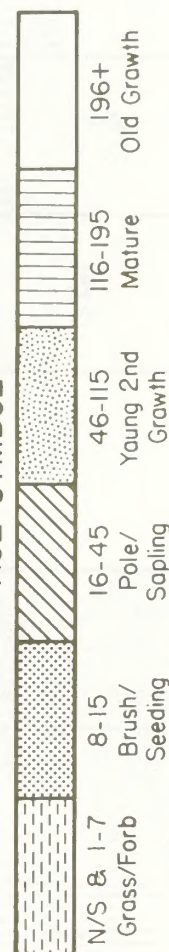
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ALTERNATIVE 8



AGE SYMBOL

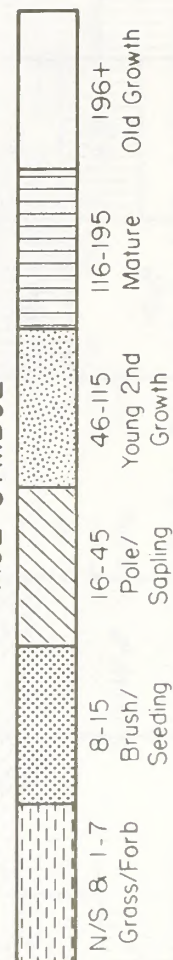


Appendix E (continued)

ALTERNATIVE 9



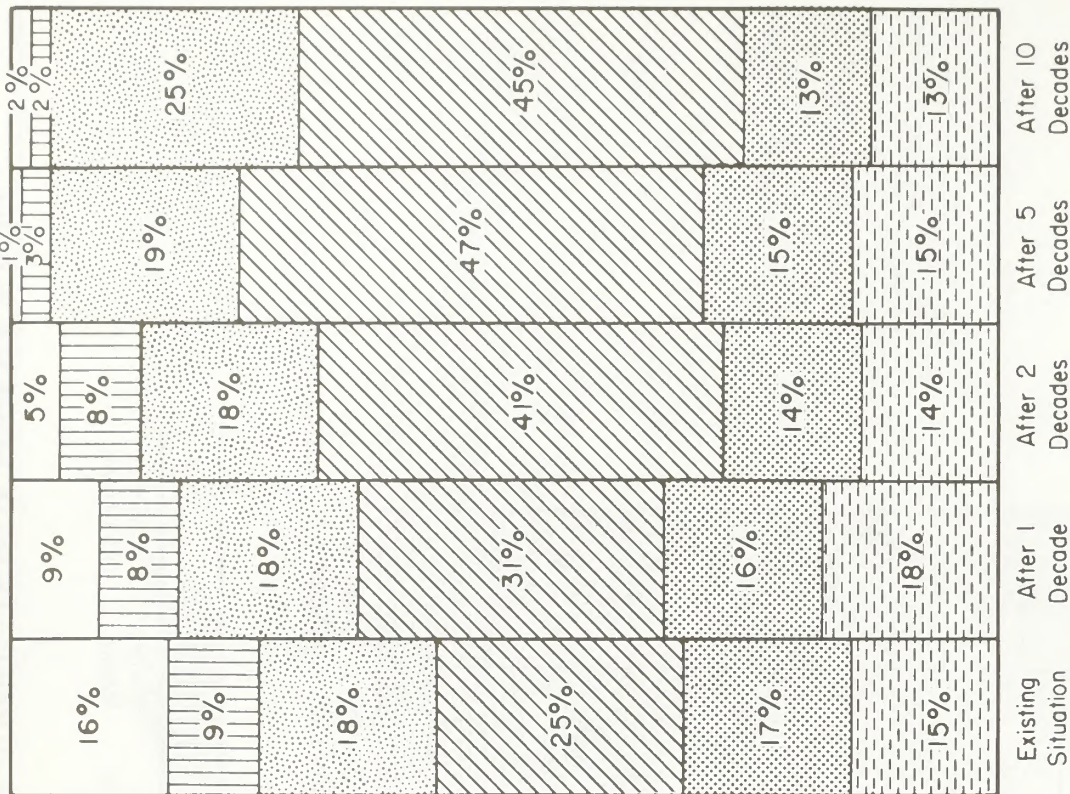
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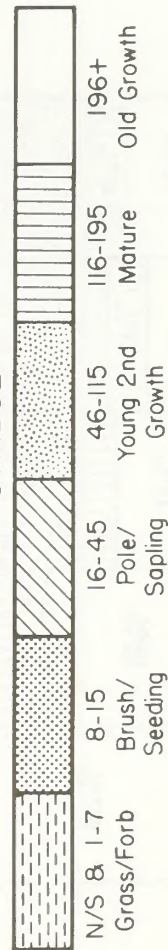
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ALTERNATIVE 2

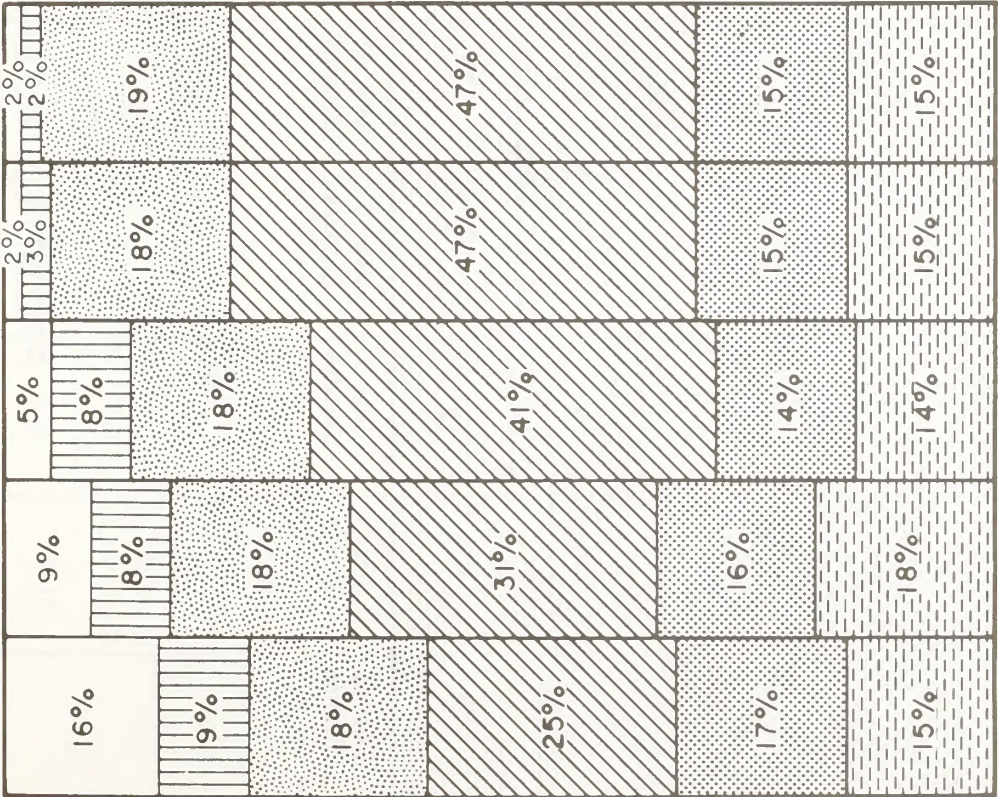


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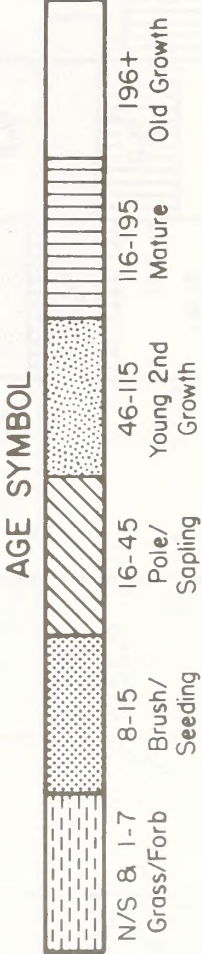
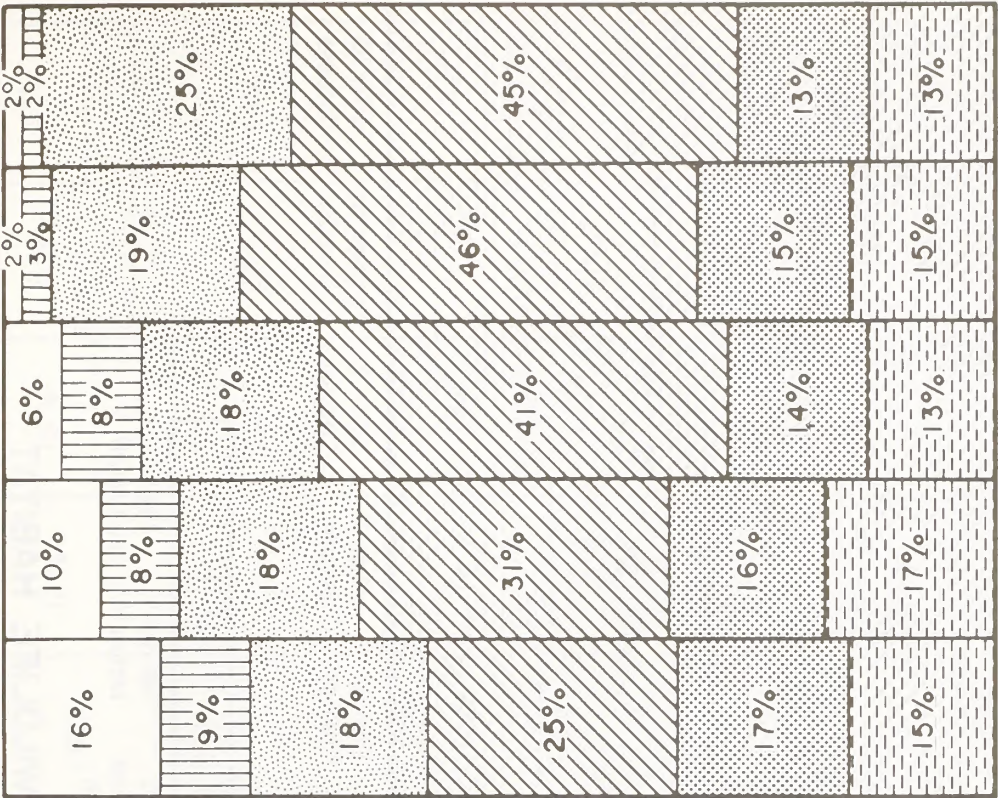


PREDICTED ALTERATION OF WILDLIFE HABITAT
ON ALL FOREST LANDS IN THE EIS AREA

ALTERNATIVE 3



ALTERNATIVE 4



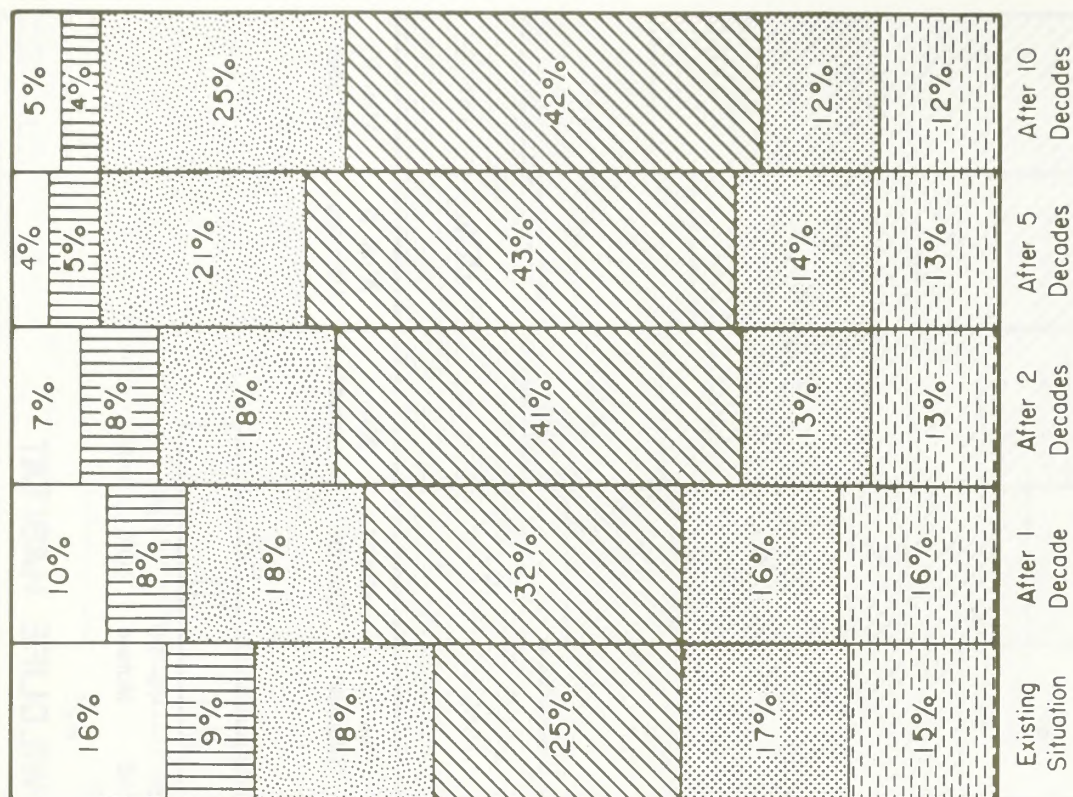
PREDICTED ALTERATION OF WILDLIFE HABITAT ON ALL FOREST LANDS IN THE EIS AREA

Appendix F (continued)

ALTERNATIVE 5



ALTERNATIVE 6



AGE SYMBOL

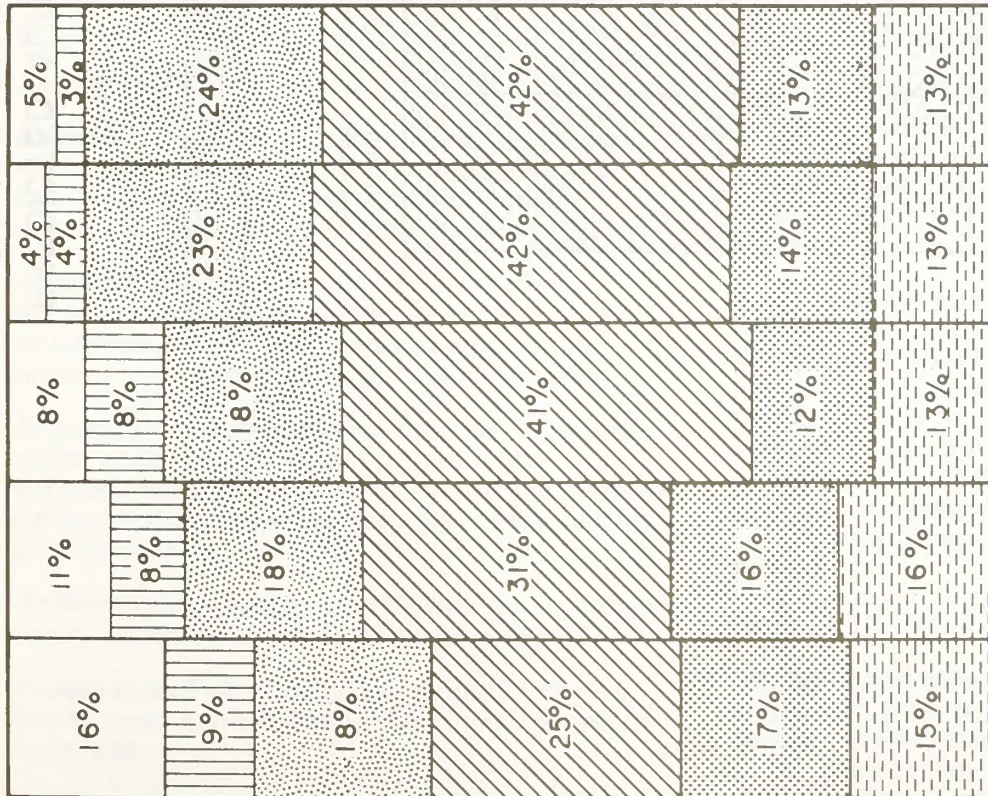


**PREDICTED ALTERATION OF WILDLIFE HABITAT
ON ALL FOREST LANDS IN THE EIS AREA**

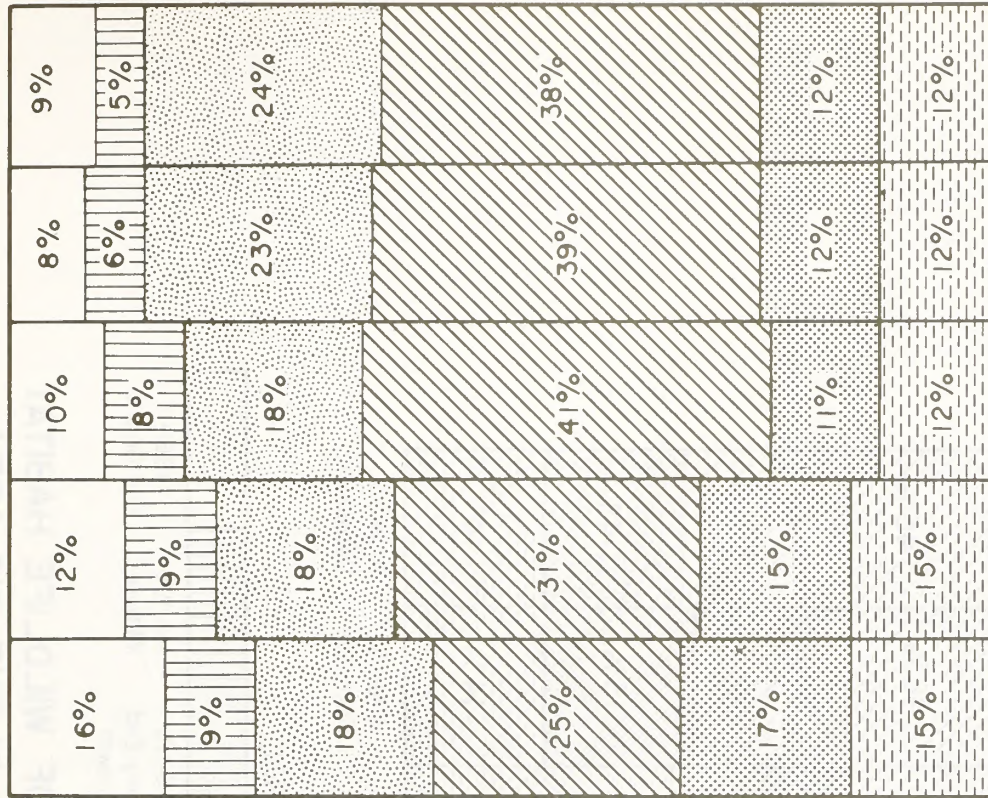
Appendix F (continued)

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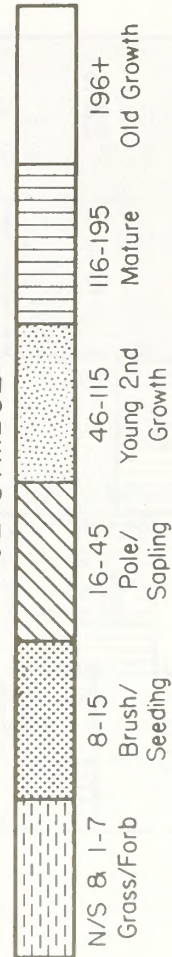
ALTERNATIVE 7



ALTERNATIVE 8



AGE SYMBOL



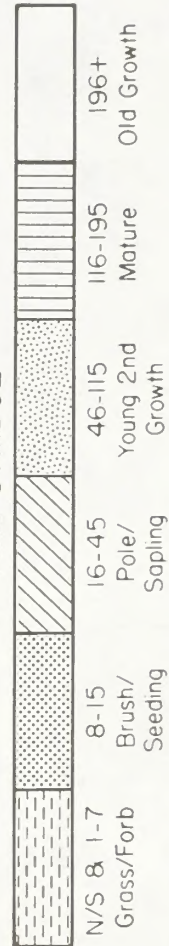
PREDICTED ALTERATION OF WILDLIFE HABITAT
ON ALL FOREST LANDS IN THE EIS AREA

Appendix F (continued)

ALTERNATIVE 9



AGE SYMBOL



PREDICTED ALTERATION OF WILDLIFE HABITAT
ON ALL FOREST LANDS IN THE EIS AREA

Glossary of Terms

Absorb - To be held within the structure of a substance.

Acre-foot - The volume of water that will cover one acre to a depth of one foot.

Adsorb - To be held on the surface of a substance.

Allowable Cut - The amount of forest products that may be harvested annually or periodically from a specified area over a stated period in accordance with the objectives of management.

Allowable Cut Effect (ACE) - The immediate increase in today's allowable cut which is justified by expected future increases in yields due to present or proposed management treatments.

Allowable Cut Determination Process - A process which deals with the steps involved in the development and evaluation of alternative levels of timber production for the purpose of establishing an allowable cut.

Ambient - Surrounding, on all sides; for air, refers to any unconfined portion of the atmosphere.

Anadromous Fish - Fish which migrate from the sea to breed in fresh water. Their offspring return to the sea.

Aquifer - A geologic formation or structure that transmits water in sufficient quantity to supply the

needs for a water development; usually saturated sands, gravel, fractures, and cavernous and vesicular rock. The term water-bearing is sometimes used synonymously with aquifer when a stratum furnishes water for a specific use.

Archeological Resources - All evidences of past human occupations other than historical documents, which can be used to reconstruct the lifeways of past peoples. These include sites, artifacts, environmental data and all other relevant information.

Area of Critical Environmental Concern (ACEC) - An area within the public lands where special management attention is required (when such areas are developed or used, or where no development is required) to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources or other natural systems or processes, or to protect life and safety from natural hazards (FLPMA Sec. 103(a)).

Aspect - The direction a slope faces.

Average Employment - The sum of number of employees, reported monthly, divided by twelve; because employment is reported for all employees working during any one month, it is a modest over-estimate of full-time equivalent employment.

Background - That portion of an area being viewed beyond the foreground-middleground (3 to 5) miles to a maximum of about 15 miles from a travel route, use area, or other observer position.

Background Levels - Amounts of pollutants present from natural sources and from human disturbances which have reached equilibrium.

Basal Area - The area of the cross-section of a tree stem near its base, generally at breast height and inclusive of bark. It is usually expressed as square feet per acre.

Bedload - The sediment that moves by sliding, rolling or bounding, on or very near, the streambed.

Biome - The largest land community unit (plant and animal) which is convenient to recognize.

Board Foot - A unit of solid wood, 1-foot square and 1-inch thick.

British Thermal Unit (Btu) - A unit of heat equal to 252 calories; quantity of heat needed to raise the temperature of one pound of water from 62° F. to 63° F.

Broadcast Burning - Intentional burning in which fire is intended to spread over all of a specific area. It may or may not qualify as prescribed burning.

Bucking - Cutting trees into log lengths.

Buffer Strip - A protective area adjacent to an area requiring special attention or protection.

Bureau Planning System - A process used in the BLM to establish land use allocations, constraints, and objectives for various categories of public land use.

Characteristic Landscape - The established landscape within a physiographic province. The term does not necessarily mean "naturalistic character." It could refer to farm lands, timber lands or other landscapes which exhibit both physiographic and land use similarities.

Clearcutting - A method of timber harvesting in which all trees, merchantable or unmerchantable, are cut from an area.

Commercial Forest Land - Forest land that is now producing or is capable of producing at least 20 cubic feet per acre per year of commercial coniferous tree species.

Commercial Thinning - Partial cuttings made in merchantable stands (40-70 years old) in order to stimulate the growth of remaining trees and increase total yield from the stand.

Community Income Effect - The sum of direct and indirect personal income generated by a change,

e.g., timber harvest. Indirect personal income results from economic activity stimulated in other local enterprises by purchase of goods and services, primarily of a support nature.

Constrained Timber Production Base - Base acreage managed for timber production at a lesser intensity in consideration for other resource management objectives, e.g., minimum harvest ages of 60 to 350 years for wildlife habitat (see Intensive Timber Production Base).

Contrast - The effect of a striking difference in the form, line, color or texture of the landscape features within the area being viewed.

Contrast Rating System - A method of determining the extent of visual impact for an existing or proposed activity that will modify any landscape feature (land and water form, vegetation and structures).

Coos Bay Wagon Road (CBWR) Lands - Public lands granted to the Southern Oregon Company and subsequently reconveyed to the United States.

Critical Habitat - That habitat considered by the Secretary of the Interior to be necessary to the normal needs or survival and recovery of listed Threatened or Endangered Species. It may also include habitat not currently occupied into which a listed species could expand.

Cull - A tree or log which is rejected because it does not meet certain specifications.

Cultural Resources - Those fragile and nonrenewable remains of human activity, occupation, or endeavor, reflected in districts, sites, structures, buildings, objects, artifacts, ruins, works of art, architecture, and natural features, that were of importance in human events. These resources consist of (1) physical remains, (2) areas where significant human events occurred--even though evidence of the event no longer remains, and (3) the environment immediately surrounding the actual resource. Cultural resources, including both prehistoric and historic remains, represent a part of the continuum of events from the earliest evidences of man to the present day.

Debris Avalanche - Fast moving failures of shallow, generally cohesionless soils on steep slopes over an impermeable failure surface.

Debris Torrent - A very fluid mass of soil, rock and vegetative debris that moves rapidly down steep, narrow stream channels.

Discharge - Rate of flow of a fluid, the volume of fluid passing a point per unit of time, commonly expressed as cubic feet per second (cfs), million gallons per day, gallons per minute, or cubic meters per second.

Distance Zone - The area that can be seen as foreground-middleground, background, or seldom-seen.

Ecosystem - An ecological unit consisting of both living and nonliving components which interact to produce a natural, stable system.

Environmental Assessment (EA) - A systematic environmental analysis of site-specific BLM activities used to determine whether such activities have a significant effect on the quality of the human environment and whether a formal environmental impact statement is required.

Environmental Impact Statement (EIS) - A formal document to be filed with the Environmental Protection Agency that considers significant environmental impacts expected from implementation of a major federal action.

Erosion (soil) - Removal of soil from its place of origin to a point of deposition other than a stream channel.

Even Flow - Maintaining a relatively constant undiminishing supply of timber from year to year for the planning cycle.

Fauna - All the animals in a given area.

Final Harvest Cut - Constitutes removal of a mature stand, either through clearcutting, the final stage of a shelterwood regime, or overstory removal.

Flora - All the plants in a given area.

Forbs - Herbaceous plants; most often used pertaining to herbaceous plants eaten by wildlife.

Foreground-middleground - The area visible from a travel route, use area, or other observer position to a distance not exceeding five miles. The outer boundary of this zone is defined as the point where the texture and form of individual plants are no longer apparent in the landscape. Vegetation is apparent only in patterns or outline.

Forest Canopy - The more or less continuous cover of branches and foliage formed collectively by the crowns of adjacent trees and other woody growth.

Forest Land - Land that is now, or is capable of becoming, at least 10 percent stocked with forest trees and that has not been developed for nontimber use.

Forest Management Program - Includes timber activity plan and all forest resource related program activity plans.

Forest Type Island - An aggregation of trees occupying a specific area and sufficiently uniform in composition, age, arrangement and condition to

be distinguishable from vegetation on adjoining areas.

Groundwater - Subsurface water in the zone of saturation.

Growing Stock - The amount of standing, green timber retained to produce forest products; also known as forest capital.

Habitat - The environment in which an organism occurs.

High-lead Logging - A cable yarding system in which lead blocks are hung on a spar or tower to provide lift to the front end of logs giving partial suspension.

Historic Resources - All evidences of human activity that date from historic (i.e., recorded history) periods. These resources include documentary data (i.e., written records, archival material, photographs, maps, etc.), sites, artifacts, environmental data, and all other relevant information. Also included are locations where documented historical events took place, even though no physical evidence of the events remain other than the setting. Historic resources are cultural resources and may be considered archeological resources when archeological work is involved in their identification and interpretation.

Igneous Rock - Rock formed from the cooling and solidification of molten rock.

Infiltration (soil) - Downward entry of water into the soil.

Intensive Forest Management Lands - All commercial forest land that is part of the timber production base for allowable cut calculation in the Douglas and South Umpqua Sustained Yield Units.

Intensive Timber Production Base - Base acreage intensively managed for timber production using a 50-year minimum harvest age in the allowable cut computation.

Intermediate Cuttings - Any removal of merchantable trees from a stand prior to the final harvest cutting, i.e., commercial thinning, sanitation/salvage, or shelterwood regeneration cuttings.

Landing - Any place on or adjacent to the logging site where logs are assembled for further transport.

Landscape Features - The land and water form, vegetation, and structures which compose the characteristic landscape.

Leach - Usually refers to the movement of chemicals through soil by water; may also refer to movement of herbicides out of leaves, stems or roots into the air or soil.

Log Flows - Destinations of harvested timber by origin. Origins used herein are management units and counties or county groupings; destinations are communities, counties or groupings of counties within which the primary processing of timber takes place.

Lumber and Wood Products, except Furniture - Defined by the Office of Management and Budget and the Standard Industrial Classification Manual as Major Group #24, which includes logging contractors engaged in cutting timber and pulpwoods; merchant sawmills, lath mills, shingle mills, planing mills, plywood mills, and veneer mills engaged in producing lumber and wood basic materials; and establishments engaged in manufacturing finished articles made entirely or mainly of wood or wood substitutes. Certain types of establishments producing wood products are classified elsewhere, e.g., furniture and office and store fixtures are classified in Major Group #25.

Management Framework Plan (MFP) - Land use plan for public lands which provides a set of goals, objectives, and constraints for a specific planning area to guide the development of detailed plans for the management of each resource.

Mass Failure - See Mass Movement.

Mass Movement - Downslope movement of soil and rock caused by gravity; may be slow (creep) or rapid (landslide, debris avalanche).

Metamorphic Rock - Rock formed from preexisting rocks but changed by heat and/or pressure to rock with new physical, chemical and mineralogical properties.

Microclimate - The climatic condition of a small area modified from the general climatic conditions by local differences in elevation or exposure.

Minimum Harvest Age - The lowest age of a stand to be scheduled for final harvest.

Mixing Height - The height above the ground through which vertical mixing of air is relatively vigorous.

Mortality Salvage - See sanitation/salvage cutting.

Multiple Use - Management of the public lands and their various resource values so that they are utilized in the combination that will best meet the present and future needs of the American people.

National Natural Landmark - Areas designated by the Secretary of Interior which contain representative examples of the nation's natural history, including terrestrial communities, aquatic

communities, landforms, geological features or habitats of native plant and animal species, possessing national significance in illustrating or interpreting the nation's natural heritage.

National Register of Historic Places - The official list, established by the Historic Preservation Act of 1966, of the Nation's cultural resources worthy of preservation. The Register lists archeological, historic, and architectural properties (i.e., districts, sites, buildings, structures, and objects) nominated for their local, State, or national significance by State and/or Federal agencies and approved by the National Register staff. The Register is maintained by the National Park Service.

Natural Levels - Amount of pollutants present from natural sources without human disturbances which have reached equilibrium.

Non-commercial Forest Land - Land which is not capable of yielding at least 20 cubic feet of wood per acre per year from commercial species, or land which is capable of producing only non-commercial tree species.

Non-degradation Policy - Use of the highest and best practicable treatment and/or control of wastes, activities and flows to maintain water quality at the highest possible levels.

Non-forest Land - Land that has been developed for non-timber uses or land that is incapable of being 10 percent stocked with forest trees.

Non-point Source Pollution - Pollution caused by the introduction of materials from diffuse sources (e.g., sediment, nutrients), or from a natural or manmade alteration in the stream system.

O&C Lands - Public lands granted to the Oregon and California Railroad Company and subsequently revested to the United States.

Old growth - A forest containing many large trees with large snags and numerous large, down logs. There is a multi-layered canopy of several species. Some of the older trees are beginning to show signs of decadence. Small openings are scattered throughout the forest. In western Oregon, forests begin to have old growth characteristics at about 200 years.

Old-Growth Dependent - An animal species so adapted that it can exist only in old-growth forests.

Operations Inventory - An intensive forest inventory which provides managers with information showing the location, acreage, silvicultural needs, and mortality-salvage or thinning needs within each section of public land.

Oregon Endangered Species Task Force - An Interagency task force represented by ODF&W, USFS, BLM, USF&WS, and Oregon State University, organized in 1973, to establish habitat management guidelines for Oregon Endangered Wildlife Species.

Outstanding Natural Areas - Areas of outstanding scenic splendor, natural wonder or scientific importance that merit preservation in their natural condition. The preservation of these resources in their natural condition is the primary management objective. Access roads, parking areas and public use facilities are normally located on the fringe of the area. The public is encouraged to walk into the area for recreation purposes wherever feasible.

Paleontology - A science dealing with the life of past geological periods as known from fossil remains.

Partial Cutting - Tree removal other than by clearcutting.

Particulates - Finely divided solid or liquid particles in the air or in an emission; includes dust, smoke fumes, mist, spray and fog.

Peak Flow - The highest amount of stream or river flow occurring in a year or for a single storm event.

Perched Water Table - The surface of a local zone of saturation held above the main body of groundwater by an impermeable layer or stratum, usually clay, and separated by the main body of ground water by an unsaturated zone.

Permeability (soil) - The quality of a soil horizon that enables water or air to move through it; may be limited by the presence of one nearly impermeable horizon even though the others are permeable.

Personal Income - The income received by all individuals in the economy from all sources; made up of wage and salary disbursements, proprietors income, rental income of persons, dividends, personal interest income, and the difference between transfer payments and personal contributions for social insurance.

Phytoplankton - Suspended, floating or weakly swimming microscopic aquatic plants.

Plankton - Organisms of relatively small size, mostly microscopic, that either have relatively small powers of locomotion or drift in the water subject to the action of waves and currents.

Plant Community - An association of plants of various species found growing together in different areas with similar site characteristics.

Plantation Release - Any action taken on an established commercial timber stand to control

stand composition and promote dominance and/or growth of suitable tree species. Treatments may include mechanical or manual slashing of undesirable brush and tree species, herbicide, biological, or a combination of methods. Forest fertilization is not considered a release treatment.

Plantation Stocking Maintenance - Any vegetation management action taken on an unestablished stand to promote the survival and establishment of suitable trees. Treatments may include using biological, mechanical, or manual weeding, mulching, herbicide or a combination of methods.

Precommercial Thinning - Partial cuttings made in immature stands (10-25 years) in order to stimulate the growth of remaining trees by making available increased soil moisture, thereby increasing total yield from the stand.

Prehistoric - Pertaining to that period of time before written history.

Progeny Site - A test area for evaluating parent seed trees by comparing the performance of their offspring seedlings.

Protection - Any action taken to protect suitable trees from adverse elements such as weather, animals, insects, and disease. Treatments include all practices which increase chances for survival and normal growth of desired tree species.

Public Lands - Any land and interest in land owned by the United States within the several States and administered by the Secretary of the Interior through the Bureau of Land Management. May include public domain, O&C or acquired lands in any combination.

Public Domain Lands - Original holdings of the United States never granted or conveyed to other jurisdictions.

Recharge - Process by which water is added to the zone of saturation, as in recharge of an aquifer.

Recreation Experience Opportunity - The opportunity for a person to realize predictable psychological and physiological outcomes from engaging in a specific recreation activity within a specific setting.

Recreation Opportunity Setting - Combination of physical, biological, social, and managerial attributes present on a particular land area which influences the experience obtained by engaging in a specific recreation activity.

Reforestation - Reestablishment of a tree crop on forest land.

Regeneration - The renewal of a commercial tree crop, whether by natural or artificial means; also, the young crop itself.

Regeneration Period - The time it takes for a new commercial timber stand to become stocked following the date of a timber sale.

Regulated Forest - A forest comprises a desired (usually even) distribution of age classes or tree sizes, when the growth equals the cut (at the highest level sustainable) and when the level of growing stock remains relatively constant.

Research Natural Areas - Areas established and maintained for research and education. The general public may be excluded or restricted where necessary to protect studies or preserve research natural areas. Lands may have: (1) typical or unusual faunistic or floristic types, associations, or other biotic phenomena, or (2) characteristic or outstanding geologic, pedologic or aquatic features or processes.

Riparian Habitat (Area or Zone) - Those terrestrial areas where the vegetation complex and microclimate conditions are products of the combined presence and influence of perennial and/or intermittent water, associated high water tables and soils which exhibit some wetness characteristics.

Runoff - That part of precipitation, as well as any other flow contributions, which appears in surface streams, either perennial or intermittent.

Sanitation/Salvage Cutting - Removal of individual trees killed or injured by fire, insects, disease, etc., and the removal of those trees likely to die prior to final harvest cut so as to utilize merchantable material.

Sawlog - A log considered suitable in size and quality for producing sawn timber.

Scenic Quality - The degree (high, moderate, and low) of visual harmony and variety within a landscape as compared to other units within the physiographic region.

Scribner Log Rule - A log rule constructed from diagrams which shows the number of 1-inch boards which can be drawn in a circle representing the small end of a log; assumes a 1/4-inch saw kerf, makes a liberal allowance for slabs, and disregards taper.

Sediment Yield - The quantity of sediment, measured in dry weight or by volume, transported in water flowing through a stream cross-section in a given time. Consists of both suspended sediment and bedload.

Sedimentary Rock - A rock formed from materials deposited from suspension or precipitated from solution and usually more or less consolidated; e.g., sandstone, shale, limestone and conglomerates.

Seldom Seen - Portions of the landscape which are generally not visible from observer positions, or areas which are visible beyond 15 miles from those positions.

Sensitive Species - Species not yet officially listed but which are undergoing a status review or are proposed for listing according to Federal Register notices published by the Secretary of the Interior or Secretary of Commerce, or according to comparable State documents published by State officials. (Reference Instruction Memo W.O. 80-722.)

Sensitivity Level(s) - The degree (high, medium, low) of user interest in scenic quality and concern about possible changes in the landscape features of an area. The two criteria for determining sensitivity levels are user volumes and user attitudes.

Seral Stage - The relatively transitory communities within a sere.

Sere - The whole series of communities which develop in a given situation.

Shelterwood Cutting - A series of partial cuttings designed to establish a new crop of trees under the protection of the old.

Silviculture - The art of producing and tending a forest.

Siphon - A pipe which uses atmospheric pressure to transfer water from one point to another against gravity.

Site Class - A measure of the relative productive capacity of an area for timber or other vegetation.

Site Preparation - Any action taken in conjunction with a reforestation effort (natural or artificial) to create an environment which is favorable for survival of suitable trees during the first growing season. This environment can be created by altering ground cover, soil or microsite conditions, using biological, mechanical, or manual clearing, prescribed burning, herbicide or a combination of methods.

Slash - The branches, bark, tops, cull logs, and broken or uprooted trees left on the ground after logging has been completed.

Slump - Rotational failure of a discrete block of soil on a failure plane that is curved from top to bottom and from side to side. The block rotates downward and outward along this failure plane while remaining more or less intact.

Smolt - A young salmon or trout that is migrating from freshwater to the ocean.

Snag - A standing dead tree from which the leaves and most of the limbs have fallen.

Soil - The unconsolidated mineral and organic material on the immediate surface of the earth that serves as a natural medium for the growth of land plants.

Soil Mapping Unit - A combination of soils, or miscellaneous land type or types that can be shown at the scale of mapping for the defined purposes of the survey; the basis for the delineations of a soil survey map.

Soil Productivity - The capacity of a soil in its normal environment to produce a specified plant or sequence of plants under a specified system of management.

Standard Industrial Classification (SIC) - An industrial classification system as defined by the Office of Management and Budget; defines industries in accordance with the composition and structure of the economy and covers the entire field of economic activity. Refer to lumber and wood products for an explanation of SIC 24.

State Historic Preservation Officer (SHPO) - The official within each State, authorized by the State at the request of the Secretary of the Interior, to act as a liaison for purposes of implementing the National Historic Preservation Act of 1966.

Stream Order - A system of stream classification. Each small unbranched tributary is a first order stream. Two first order streams join to make a second order stream. A third order stream has only first and second order tributaries, and so forth.

Subsurface Flow - Horizontal movement of water through the soil profile.

Succession - The orderly process of plant community change. Process by which one plant community will succeed another over time given the same climatic conditions.

Surplus Inventory - A temporary (1-3 decades) excess of growing stock over and above that which is necessary to sustain the even flow level.

Survival Cover - Cover required by animals to mitigate effects of a period of severe weather that cannot be met by thermal cover. The objective of survival cover is to provide a forest stand structure which will provide shade during times of high temperatures and intercept snow during severe storms and provide significant quantities of forage in the same stand. Stand closure should be at least 75 percent or more.

Suspended Sediment - Sediment suspended in a fluid by the upward components of turbulent currents or by colloidal suspension.

Sustained Yield - The yield that a forest can produce continuously at a given intensity of management.

Teratogenicity - Ability of a substance to cause abnormal development of a fetus.

Texture (soil) - The relative proportion of sand, silt and clay (expressed as percentages) in a soil; grouped into standard classes and subclasses in the USDA Soil Survey Manual.

Thermal Cover - Cover used by animals to ameliorate effects of weather. For elk, a stand of conifer trees which are 40 feet or more tall with an average crown closure of 70 percent or more. For deer, cover may include saplings, shrubs or trees at least 5 feet tall with 75 percent crown closure.

Timber Lands - See Forest Land.

Timber Preservation Area - An area withdrawn from mineral entry and the timber base to protect the scientific and educational values of timber resources.

Timber Production Base - Acres included in the calculation of the allowable cut (see Intensive Forest Management Lands).

Timber Production Capability Classification (TPCC) - A classification system that identifies the commercial forest and base capable of producing timber on a sustained yield basis.

True Fir - A member of the genus *Abies*, e.g., white fir (*Abies concolor*). Douglas-fir (*Pseudotsuga menziesii*) is not a true fir.

Understory Species - Shade-tolerant plant species which characteristically grow beneath the forest canopy; e.g., blackberry and rhododendron.

Unit Resource Analysis (URA) - A BLM planning document which contains a comprehensive inventory and analysis of the resources within a specified geographic area and an analysis of their potential for development.

Visitor-day - Twelve visitor-hours, which may be aggregated continuously, intermittently or simultaneously by one or more persons. Visitor-days may occur either as recreation visitor-days or as non-recreation visitor-days.

Visual Resource Basic Elements - The four major elements (form, line, color, texture) which determine how the character of a landscape is perceived.

Visual Resources - The land, water, vegetation, animals and other features that are visible on all public lands (scenic values).

Visual Resource Management (VRM) - The planning, design and implementation of management objectives to provide acceptable levels of visual impacts.

Visual Resource Management Classes - The degree of alteration that is acceptable within the characteristic landscape. Based upon the physical and sociological characteristics of any given homogeneous area and serves as a management objective to mitigate or avoid adverse visual impacts. Class I provides the highest level of protection for scenic values, and Class IV the lowest level.

Volatilize - To evaporate; to change from a liquid to a gas.

Water Quality - The combined physical, chemical and biological characteristics of water bodies.

Watershed - The area drained by a given stream.

Wetland or Wetland Habitat - Permanently wet or intermittently flooded areas where the water table (fresh, saline, or brackish) is at, near, or above the soil surface for extended intervals, where hydric wet soil conditions are normally exhibited, and where depths generally do not exceed two meters. Vegetation generally consists of emergent water-loving forms (hydrophytes) which require at least a periodically saturated soil condition for growth and reproduction. In certain instances, vegetation may be completely lacking.

Wildlife Tree - A live tree remaining after timber harvest that can become a snag for cavity dwelling wildlife.

Yarding - The act or process of conveying logs to a landing.

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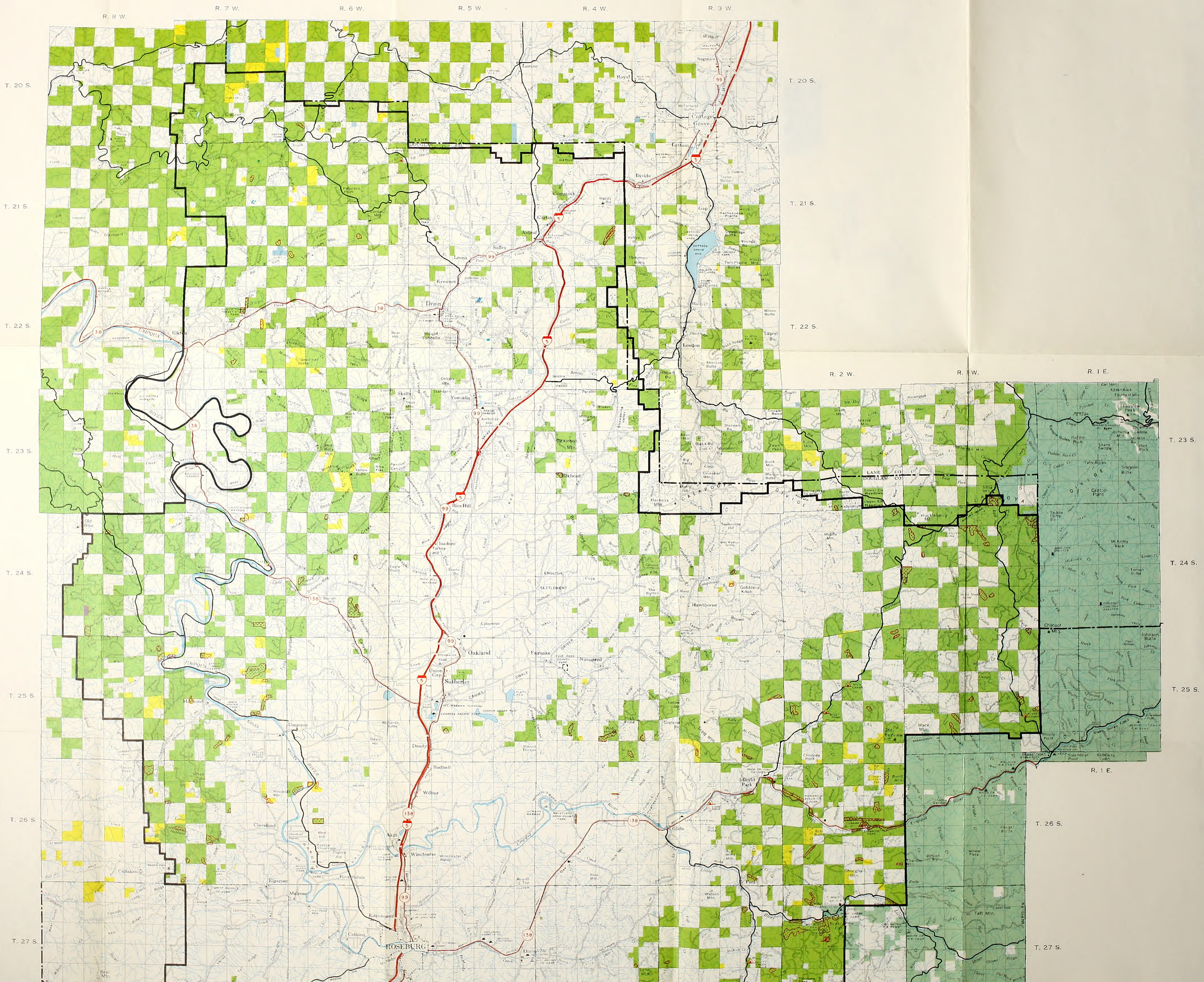
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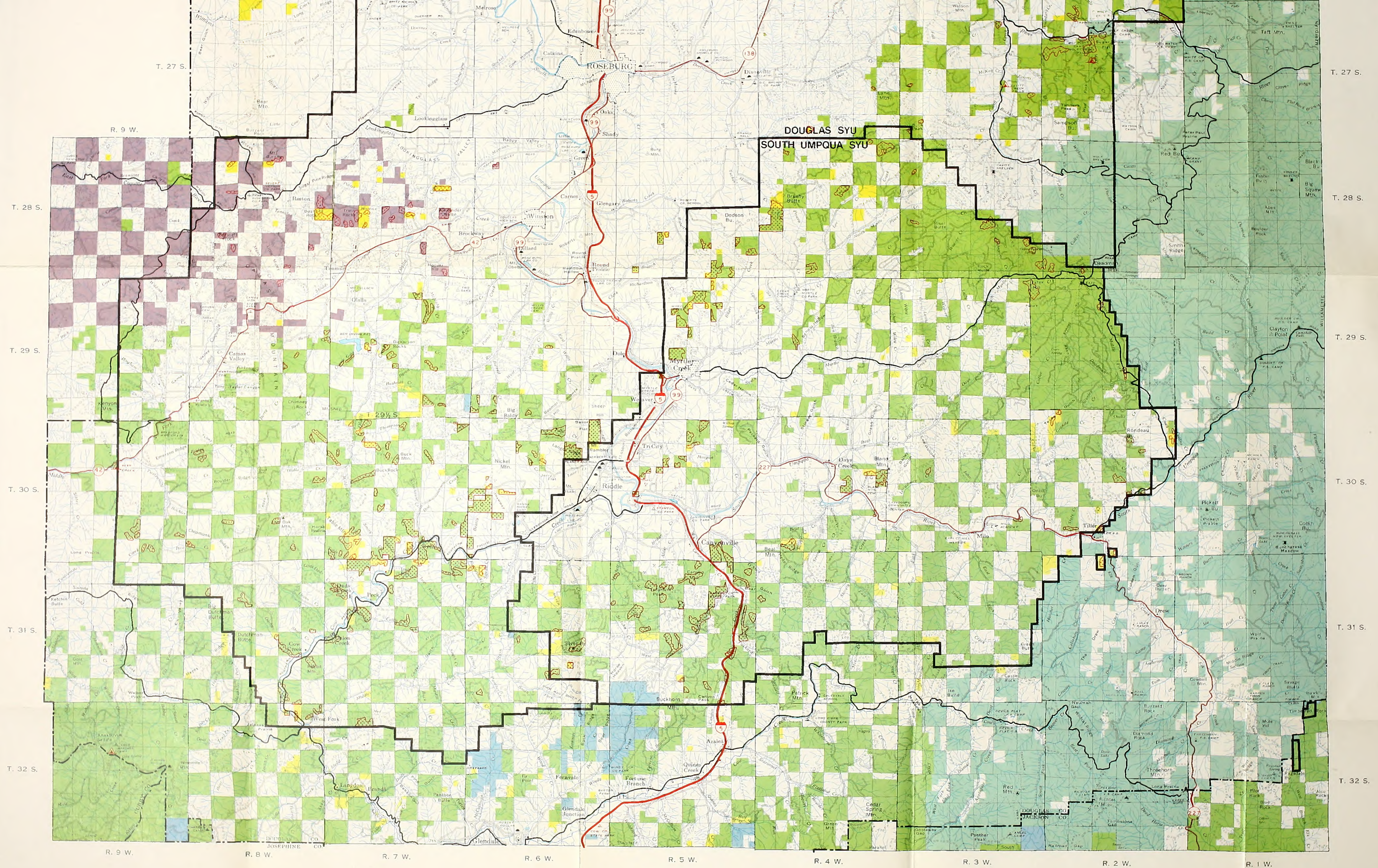
Form 1279-3
(June 1984)

BORROWER

SD 538.2 .07 R67 19
Roseburg sustained
units

DATE LOANED	BORROWER
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U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
ROSEBURG DISTRICT

DOUGLAS and SOUTH UMPQUA SUSTAINED YIELD UNITS

Roseburg Environmental Impact Statement

1982

Figure 1-1

